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ABSTRACT

Technology transfer, that is, the dissemination of the results of research and development to the general community, is discussed in this report in relation to the learning society and the mission of the community college. First, definitions of technology are presented and the rapid pace of technological change worldwide is examined. Then, the role of technology transfer as part of an institutional commitment to lifelong learning is explored, with emphasis given to community college partnerships with business, industry, and community organizations. Institutional commitment to service is then recommended as a means of enhancing the spread of technological literacy and as a requirement for achieving functional relationships with various agencies and organizations in the community. After guidelines for facilitating such relationships, especially with business and industry, are provided, the need for statewide coordination of technology transfer is underscored. Next, such coordination efforts in Ohio are detailed, notably the Ohio Technology Transfer Organization, a statewide information network consisting of Ohio State University and the state's two-year colleges. The problem of technological obsolescence in the work force is then considered, and strategies to prevent or counter it are presented. Conclusions stress the need for strategic planning and the statewide coordination of educational efforts. Sample materials from Ohio projects are appended. (KL)

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STATEWIDE COORDINATION IN TECHNOLOGY TRANSFER

by

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on the

Role of Community Colleges

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In 1973, Dr. Edmund J. Gleazer, Jr., former President of the American Association of Community and Junior Colleges, made the following statement:

> The community college that defines itself as a community-based performance-based, postsecondary institution will have four basic continuing objectives:
>
> 1. Current, accurate, and comprehensive information about the community and how the institution is serving its community.
>
> 2. Access to information that enables the college to develop its human resources consistent with national needs and trends.
>
> 3. A comprehensive plan expressed in terms that can be understood and supported by the community.
>
> 4. The ability to justify its need for resources and to demonstrate that they have been used effectively.
>
> In "Forward," Conducting Community Impact Studies, A Handbook for Community Colleges by J. Frank Armijo, National Center for Higher Education Management Systems, 1978.

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Shortly after I began to work on my presentation, I was reminded of the minister who had been reassigned to a parish in Texas. Because he wanted to impress the congregation, he pulled his best sermon from his files. Only one parishioner, a cowboy, appeared in church on Sunday. The minister preached the entire sermon. After church the minister asked the cowboy how he liked the sermon. The cowboy responded, "You know Reverend, each night I take a load of fodder down to feed the cattle, If only one cow shows up, however, I don't give her the whole load."

After spending some time on the presentation, and not wanting to give you the entire load, I settled on the following limited, but achievable objectives:

1. To define technology transfer in a context that requires some way for dealing with trend analysis and environmental scanning and the relationship to the learning society and
2. To examine selected projects relating to technology transfer and discuss the strategic planning process and coordination requirements for postsecondary education.

Definition of Technology

Any discussion about technology transfer must begin with a definition of technology. Bugliarello offers a biosocial view of technology. He states:

> Technology is a process, it is a social process which generates and combines know-how and people in order to extend the physical range of man. The range, if you like, and power over muscles, over the brain, and over organs. Thus, technology is a people process; it's done by people and it enhances people.
>
> But it is also a biological process, because in enhancing people, it continues to be carried on outside of our bodies. And by now, really, to a growing extent, with pacemakers and artificial organs, also inside our bodies. It continues to carry out the process of evolution. Both as a people process and as a biological process, technology has been with us from the very beginning of our species some two million years ago. Thus, technology was born with people, technology has been developed by people and technology has affected people.[1]

Young says, "Technology is all the techniques, knowledge, lore, methods and tools that have helped society survive and improve its life."[2] Branscomb states, "Many people tend to think of technology as being embodied in the machines that we invent and use, but technology is certainly not machines. Technology is what people do with what they know."[3]

Several persons make a distinction between science and technology. Kahn indicates that science can be thought of as "rules" and technology as "tools" with science as the pursuit of knowledge while technology is the use of knowledge. "The scientist may pursue knowledge for its own sake but the technologist is utility-oriented."[4] Richman states:

> Technology is not merely the application of science. The wheel and the lever owe nothing to theoretical physics and the bow and the arrow were used without knowledge of ballistics. Man knew the "how" before he learned the "why." Increasingly, however, science is preceding technology. By better understanding the rules, we can anticipate ways of putting them to use. Theory sometimes paves the way for practice today. In turn, technology provides the devices scientists need in their pursuit of knowledge.[5]

Pascarella states, "Both science and technology are the fruits of creativity. Developing an invention or bringing an innovation into the marketplace demands a blending of knowldege, insights, and anticipation of need."[6]

Two other terms are important to any discussion about technology transfer, infrastructure and appropriate technology. Burke states:

> Change occurs as a result of many factors, but only under certain conditions. The most important is that a "technological infrastructure" must exist. The Egyptians could not have invented the plow if they had not known how to work with wood or domesticate animals. Second, for the technological change to take hold, be used, and have an effect, there must be a need for it. Pots were not made before there was a surplus of something that people wanted to keep.[7]

The term appropriate technology has become acknowledged as "a complete package solution to the development problems of a particular community rather than a piecemeal list of particular solutions. This package is appropriate to the local skills and other resources and offers the prospect of continuous development in the future."[8]

Trend Analysis and Environmental Scanning

Currently there is some debate about the pace of technological innovation. Kincaid and Kincaid indicate that major breakthroughs in the last quarter century were fewer than in the previous 25 years and fewer than in the two preceeding centuries. They indicate that many of the breakthroughs that have had visible impact on our daily lives came more than a half century ago. (See FIGURE 1)[9] On the other hand, Buckminister Fuller states, "Because of the acceleration of our technological development, the next ten years will be equivalent to the last five million."[10] Dean Rusk states, "The pace of events is moving so fast that unless we find some way to keep our sights on tomorrow, we cannot be in touch with today."[11]

The debate about the pace of technological change is most apparent in discussions about the investment in research and development. Pascarella states:

FIGURE 1

TIMETABLE OF TECHNOLOGICAL BREAKTHROUGHS

	Years Ago		Years Ago
Use of antiseptics in surgery	100	Rocket engine	50
Storage battery		Commercial fertilizers	40
Dynamite		Hybrid seed	
Use of petroleum for heating, cooking, lighting		Air conditioning	
Telephone		Xerography	
Steam turbine		Electron microscope	35
Use of steel in construction		Radar	
Internal combustion engine		Antibiotics	30
Synthetic chemicals		Artificial insemination	
Electric generator	90	Atomic bomb	
Elevator		Television	
Recording & reproduction of sound		Ballistic missile	
		Electronic computer	
		Electronic transistor	
Electric light	75	Gas turbines	25
Electric motor		Jet engines	
Maching gun		Stimulated emission of radiation (Maser)	
Steel ships		Nuclear power	
Aluminum		Practical use of space satellites	10
Submarine		Holography	5
Automobile		Brain scanner	2
Synthetic drugs	65		
Synthetic fibers & plastics			
Radio			
Airplane	60		

Source: I.W. and J.F. Kincaid, Journal of the Assn. for the Advancement of Invention and Innovation, July/Aug. 1976.

> Research and development include a range of efforts from "basic research" where new knowledge is sought, to "applied research" which works toward practical application of knowledge, and "development" where new products and services take this final shape.[12]

> In January of 1978, a group of distinguished scientists, many of whom were Nobel laureates, testified before a Senate subcommittee and expressed their concern over the lack of consistent science and health policy in the U.S. and the inadequacy of funding for basic research. They pointed out that funds spent for basic research had dropped despite rising costs, industry employed 43,000 fewer scientists in 1976 than it did in 1970, and the percentage of the gross national product for research had dropped substantially since 1967 while it was rising fast in Japan, West Germany, and the USSR.[13]

A report by the Organization for Economic Cooperation and Development warned that the research function in universities in virtually all of the 25 developed countries that belong to O.E.C.D. is threatened by "a series of profound changes induced by social, political, and economic forces."[14] The report cites four general pressures that have led to threats to long-term, basic research as (1) fluctuations in student enrollment, (2) a slowdown in the growth of financial resources and a change in the balance among the various sources of research funds, (3) governmental pressure for what is deemed to be "socially relevant research," and (4) "changing social values that have led to calls for democratization of university decision making and to "bureaucratization of university research." As a result "university staffs have aged together, with almost inevitable effects on research performance." An end to growth has also lowered the morale of junior faculty members who "recognize that professorial posts are likely to remain filled and hence unobtainable for years or even decades to come." The O.E.C.D. expects such pressures to increase. As a result there is a real risk that in some O.E.C.D. countries universities will find themselves performing short-term applied research rather than the strategic research related to social, national and international agenda.

A series of reports produced by the National Commission on Research indicate that rapid deterioration and growing obsolescence of laboratory equipment in

American universities must be halted if the American research enterprise is to remain efficient and competitive internationally.[15] A 1979 report of the National Science Board, a fourth annual report to the President on the state of science and technology, indicates that the U.S. commitment to science and technology is building up to an encouraging rate after a decade of erosion.[16]

Business and industry has been a major provider of research and development in the past. During recent years industry's share of spending for basic research lost considerable ground. In addition, R & D activities have shifted to shorter-term payoff, 2 to 3 years in contrast to the 10 to 15 years required for basic research, and "defensive R & D." Traditionally business has been committed to shorter term R & D, leaving basic research largly to government and universities.

> Under pressure to maintain profits in the face of rising costs and new constraints, industry has taken a hard look at R & D spending and demanded measurable results. Longer range research, hard to measure and obviously not a producer of immediate results, has been getting less and less attention. About half of industry R & D money, surveys show, is being devoted to improving existing products while a third is invested in developing new products.[17]

> Another shift that has cut into the limited dollars available for innovation is a defensive move that companies have made to comply with regulations on such things as pollution control, worker safety, and product reliability.[18]

Some corporate executives have indicated that the amount of money spent in response to federal regulations is growing at an annual rate of increase of 10 to 17 percent. This means that R & D devoted to growth and diversification is being diverted from the traditional forms of innovation that gave us new products, new industries, and new jobs.

The slowdown and change in emphasis affects productivity. Economic competitors to the U.S. who invest heavily in R & D are faring better in productivity. A report by The Conference Board states "With 1967 as a base of 100, output per hour in the United States rose from 115.7 in 1972 to 129.2 in 1978. During this same time period, the output in Japan rose from 162.3 to 215.7 and in Germany from 128.7 to 175.3."[19] Kendrick states, "The industries that spend above average on

R & D tend to have higher rates of productivity advance."[20]

R and D itself is undergoing significant change. Gone are the days when a scientist could make important inventions with equipment he might build himself. R & D has reached barriers that are harder to penetrate in science. Science has been industrialized. Industry must mobilize large amounts of capital, build expensive research facilities, and employ highly educated specialists to make advances which sometimes only they can understand. Corporate management also affects innovation. "Large companies are now managed by professional managers who neither inherited the business nor expect to pass it along to their children. Nor do they expect necessarily to remain with the company for the rest of their lives."[21]

Although views will differ on the health status of R & D, there appears to be increased concern about the investment in R & D and the U.S. economy. Business Week indicates:

> American technology is alive and well. Despite the alarmed outcries in recent years that the U.S. is losing its technological vigor, there is growing evidence to the contrary. If anything, the pace of innovation is accelerating. The breadth and scope of research currently under way in U.S. laboratories strongly suggests that a technological renaissance may already be in progress. Indeed, this new technology could have a more profound effect on the way people live than the invention of the electric light, the radio, or the airplane.[22]

The definition of technology used in this document combines know-how with people. Reference has already been made to scientists and their role in R & D. Technology transfer, however, is dependent upon the critical mass of people with vital skills who can do essential work. Blue collar skill is aging in the U.S. and small tool shops as well as larger machinery manufacturers cannot find willing younger men to train in order to maintain or expand production. "Long the world leader in machine tool production the U.S. has seen its share of the world market shrink from 21% in 1966 to a mere 7% now. Imports now serve fully 25% of the domestic market."[23] The people problem extends beyond currently recognized occupations. Lahti states: "By 1985, 5000

new occupations, currently not recognized, will be created, and within 10 years one in three workers will be employed at jobs that do not exist today."[24]

It appears that increased concern is evolving about many of the interrelationships described briefly above. Atkinson states "For modern industrial societies the long-range investment in science and technology through support of basic research is imperative and a capital investment in the national future."[25] In his fiscal 1979 budget message, former President Carter stated:

> The administration believes that the continued advancement of basic knowledge in all fields of science is essential to the continued growth of the economy and to the understanding and ultimate solutions of problems in many areas of national concern, such as health, energy, environment, and national defense.[26]

With regard to the concern about a growing national shortage of skilled labor, an assembly of educators and industrial leaders sponsored by the American Association of Community and Junior Colleges, the American Vocational Association, and the American Society for Training and Development made the following recommendations:

1. The federal government should establish a policy on the development of human resources that designates lifelong education and training as an "absolutely necessary" national investment.

2. President Carter should call a White House conference to draw attention to the need for a national policy designed to increase the productivity of workers and to decrease unemployment.

3. The new Department of Education should promote more communication between educational institutions and business on manpower issues.

4. The major national associations concerned with occupational education and training should establish pilot projects to demonstrate that - together - education, business, and industry can produce skilled workers.

5. A national program to define job markets and provide information on which to base cooperative training and education programs.

6. A national commitment to continuing education programs that would help workers upgrade their skills and attitudes and train for new positions.

7. "Education-delivery systems," such as competency-based instruction, that allow students to enter and transfer to or from any high-school, post-high-school, military, labor, or industrial education program.

8. A program to identify and publicize "effective working relationships" that education and industry have already established.[27]

American Vocational Association Executive Director Gene Bottoms testified at a June 1981 meeting of the Senate Subcommittee on Employment and Productivity and stated "The nation's employment and training policies must be reformed to conform to an occupational training structure rather than a welfare structure."[28]

Monitoring change in society as a result of science and technology is receiving increased attention. Wenk states:

> The key decisions regarding technology no longer are made in the decentralized marketplace. Rather, both ends and means are set by public policies of central governments. As a consequence, governments have become more technological, and technology has become more political.[29]

In this climate, early warning systems began to evolve to deal with the questions: "What will happen, if?" and "What may happen, unless?" The National Environmental Policy Act of 1969 and the Technology Assessment Act of 1972 were enacted so that the Congress could anticipate and understand, to the fullest extent possible, the effects of applying technology. The National Science and Technology Policy Organization and Priority Act of 1976 provided that a policy-planning capability be established in the Executive Office of the President to examine current and projected trends in science and technology and their effect on social, economic, and other national requirements.

Monitoring change in society at the regional level appears to be increasing. In 1977, the Academy for Contemporary Problems published Stimulating the Economy of the Great Lakes States which discusses the issues related to the transition from heavy reliance on manufacturing, characterized as having a high degree of economic interdependence and concentrated in central cities, to a more diversifeid and balanced economic basis.[30] The New England Board of Higher Education's Commission

on Higher Education and the Economy of New England, in The Prospectus, reflects on the importance of higher education in the region and the increasing emphasis on economic development by the states.[31] The 1980 Annual Report of the thirteen state Western Interstate Commission for Higher Education indicates "economic development issues are high on the agenda of policy makers," including issues such as shortages of trained manpower for rapidly growing industries like microelectronics and energy production.[32] In The Need for Quality, education and government leaders in the South have been urged to undertake a wide-ranging program to raise the quality of teaching in the region's public schools and colleges.[33]

Organizations are also interested in monitoring change that results from advances in science and technology. The AFL-CIO held a conference on technological change and published Silicon, Satellites, and Robots: The Impacts of Technological Change on the Workplace.[34] The Bureau of Vocational and Adult Education of the U.S. Office of Education, The Council for Occupational Education of the American Association of Community and Junior Colleges and The American Society for Training and Development sponsored a conference on Technology Assessment and Occupational Education In The Future in 1979 and a conference on The Role of Education In The Reindustrialization of the United States in 1980.[35]

George Herbert, President of the Research Triangle Institute in North Carolina stated "I do not believe the changes, in the form of new directions in research and technology, are too difficult to predict. And if they do occur, these changes generally will be consistent with the fact that the nation's decline in defense, in productivity and in international trade dictates renewed emphasis on technology and applications in the next decade"[36] Other areas identified as needing special attention were computer sciences, robotics and other production techniques, materials engineering, nuclear energy research, climate and weather, and oceanography.

Technology Transfer and The Learning Society

In Less Time, More Options, the Carnegie Commission on Higher Education states:

> Society would gain if work and study were mixed throughout a lifetime, thus reducing the sense of sharply compartmentalized roles of isolated student v. workers and of youth v. isolated age. The sense of isolation would be reduced if more students were also workers and if more workers could also be students; if the ages mixed on the job and in the classroom in a more normally structured type of community; if all members of the community valued both study and work and had a better chance to understand the flow of life from youth to age. Society would be more integrated across the lines that now separate students and workers, youth and age.[37]

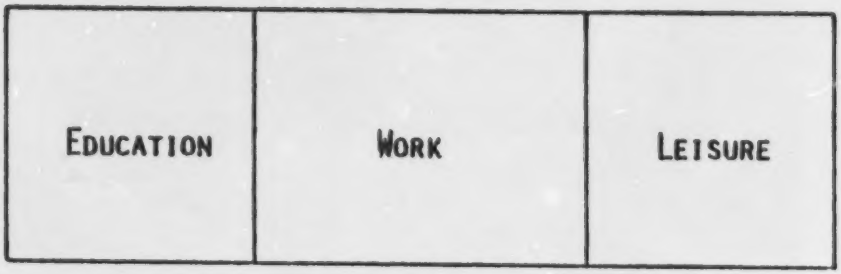
As the pace of technological change accelerates, no education will last a lifetime. The linear life plan which had been divided into three full-time phases of education for the young, work for the middle-aged, and enforced leisure for the elderly is yielding to a blended life plan that permits learning, work, and leisure to go on concurrently. (FIGURE 2 contrasts linear and integrated life plans) Our institutional planning processes and personnel policies must incorporate such flexibility for students and college personnel.

An institutional commitment to technology transfer must go beyond the knowledge dimensions related to a particular field of study. While one must know something about the science and technology of computers, it is equally if not more important to understand how the technology is used in organizations. To illustrate the point, computer equipment has grown in sophistication much faster than the managerial capability for directing its use. Although computer specialists who supervise train persons to supervise data-processing systems possess strong technical expertise to perform that role, they often lack the business background that is needed to determine just how those systems can best be used to improve the operation of the enterprize. Because computer managers are not responsible for developing new uses for the computer or even for coordinating the data processing of different departments, it is safe to assume that many organizations do not fully utilize their computer potential and may wind up wasting what they do use through needless

FIGURE 2

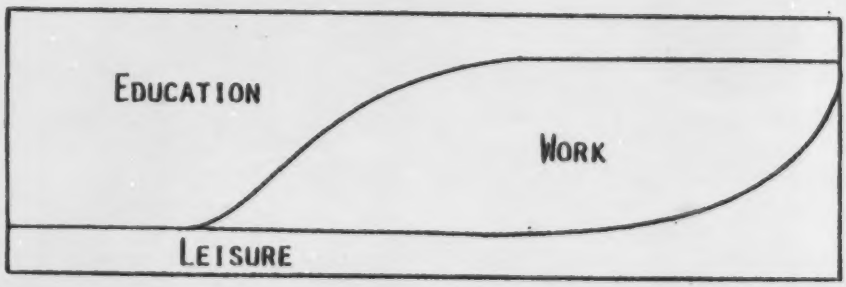
LIFE PLANS

LINEAR



BIRTH -CHILDHOOD-ADOLESCENCE- MIDDLE YEARS OLD AGE- DEATH

INTEGRATED



duplication. The absence of executives who understand both technical systems and management needs can be met by forming a management information system (MIS) steering committee composed of top corporate officers and computer managers. Although the communications gap between computer managers and line executives may be vast, the steering committee appears to hold potential for resolving the consumer and provider needs across the institution. Thus, technology transfer involves an anatomy of organizational structure as a prelude to determining specific training needs. (See FIGURE 3)

Another important consideration in technology transfer relates to stages of organizational development. Stages of organizational development were discussed briefly elsewhere. Nolan describes six stages of organizational development as they relate to corporate computing activities as (1) initiation, (2) contagion, (3) control, (4) integration, (5) data administration, and (6) maturity.[38] During stage 2 more and more managers become frustrated in their attempts to obtain information from the system to support decision-making needs. Therefore, in stage 3 there is a shift from management of the computer to management of data resources. While the description of these transitions is interesting, the point central to this discussion is that the "stages of development concept" can be applied to virtually every aspect of the organization - the corporate structure, policy development, management functions including corporate data management and decision making, the dynamics of the product life cycle from R & D to dissemination through marketing, labor-management relationships including organizational climate and quality of life issues, and human resource development including career life planning and matching individual and organizational needs. Thus, technology transfer can be extended to every aspect of the private and public sector hierarchy from apprentice through top management in the workplace and outside of it. (FIGURE 4) displays these dimensions) Quality of worklife (QWL) improvement efforts are emerging as a major area of concern in labor-management relations.[39]

FIGURE 3

ORGANIZATIONAL STRUCTURE

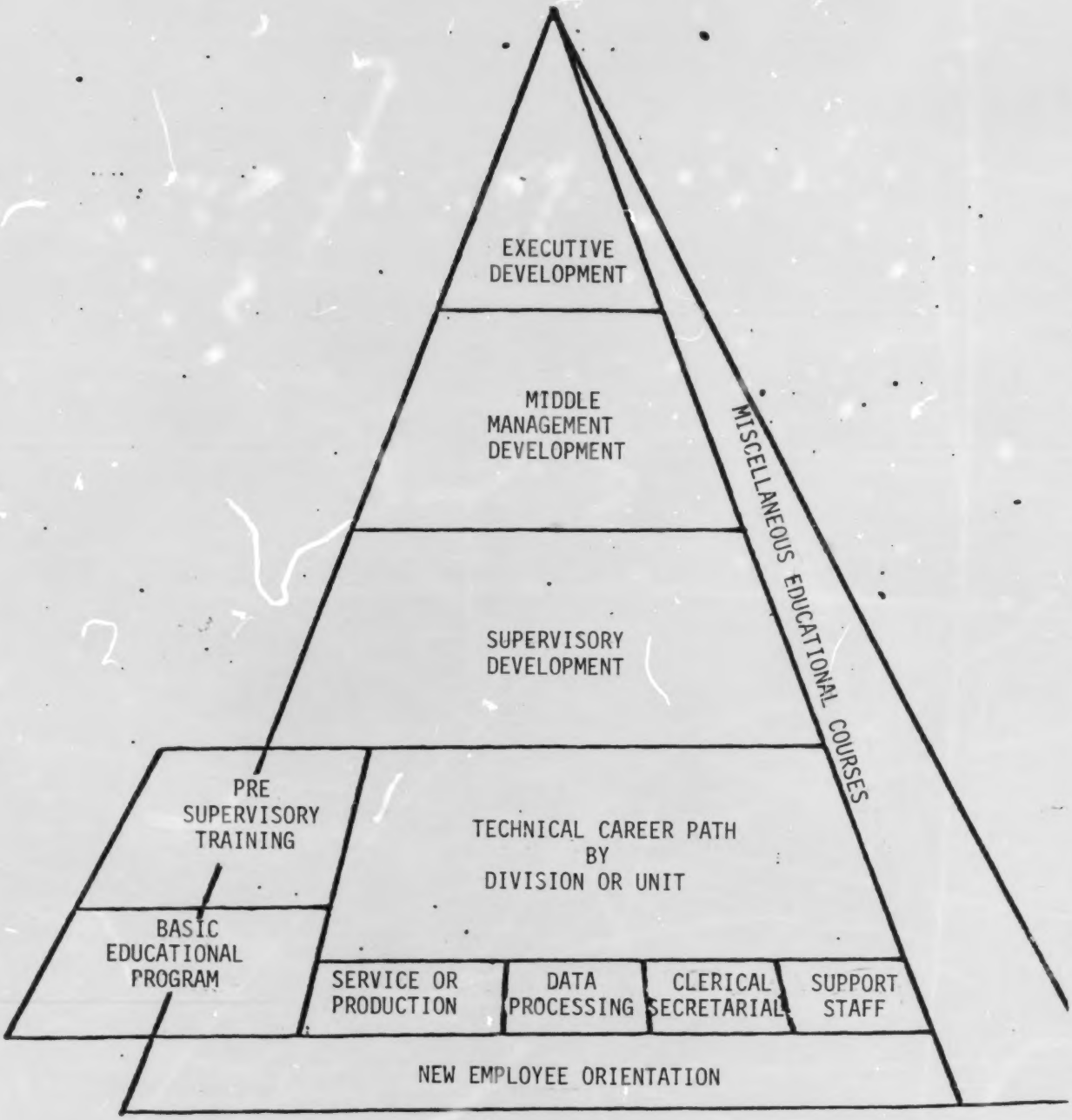


FIGURE 4

PRIVATE & PUBLIC SECTOR HIERARCHY

MANAGEMENT

WHITE COLLAR

TOP MANAGEMENT

MIDDLE MANAGEMENT

FOREMAN

SUPERVISOR

LABOR

BLUE AND PINK COLLAR

CHIEF STEWARD

ASSISTANT CHIEF STEWARD

LOCAL OFFICER

COMMITTEE CHAIRPERSON

NEGOTIATING

GRIEVANCE

APPRENTICE - INDUSTRIAL
- MACHINIST
- MILLRIGHT
- PLUMBER/PIPE FITTER
- WELDER

- BUILDING TRADES
- BRICKLAYER/MASON
- CARPENTER
- ELECTRICIAN

QUALITY OF LIFE ISSUES

AT WORK

- FLEXITIME
- TRAINING/RETRAINING
- STRESS ADAPTATION
- HUMANIZING
- ALCOHOLISM
- DRUGS
- DEPRESSION
- JOB ENRICHMENT

OUT OF WORK

- RECREATION
- PARENTING
- HEALTH CARE
- RETIREMENT

In relating technology transfer to the evolving learning society, it is important to recognize essential facts such as 65 million Americans lack basic competency skills.[40] Other essential problems include research illiteracy, information processing illiteracy, management systems illiteracy, occupational illiteracy. To illustrate but one of these areas, research results from the administration of the Occupational Literacy Exam indicates that the majority of Americans are neither knowledgeable, informed nor educated about available job options.[41] Research indicates that 60 million Americans now find themselves in some form of instructional setting, with 46 million of them outside our formal school and college system. What research exists that describes these instructional settings and how would "inplant" corporate learning and working cultures differ from the academic cultures of postsecondary education?

Technology transfer in the learning society can develop into a variety of partnerships between postsecondary and the secondary schools; within and between colleges; business, industry, and community organizations; telecommunications; and professional associations, particularly the American Society for Training and Development. Such partnerships, however, must be based on a set of assumptions common to the participants in the partnership. These assumptions, too, go beyond the science and technology dimensions related to a particular field as in the field of computers. These assumptions extend to the emerging networks of learning systems and educational technology itself. Lewis and Blalock specified assumptions underlying emerging networks of learning systems as (1) learning takes place through the community; (2) each member of the community is both a learner and a resource person; (3) learning, in this broad community sense, is controlled by the learner; (4) learning networks should meet the needs of all individuals; (5) learning networks should assume equality of access and opportunity; (6) learning networks should meet society's rules; and (7) learning networks need to be adaptable.[42]

Wagschal states assumptions about likely developments in education and technology over the coming decades as follows:

- The rapid developments we are presently seeing in all aspects of the electronics/communications/information processing industry will continue and intensify over the next 20 years. Both the hardware and software for computers, video-disc, cable television, and combinations thereof will continue to become more efficient, cheaper, and more powerful at an exponential rate.

- The cost of providing traditional labor-intensive schooling at all levels will continue to skyrocket. At the same time, public funds for education will continue to shrink.

- Whether the new electronic media are introduced into the schools or not, the coming decades will see learners of all ages relying primarily on electronics of one kind or another for most of what they learn. Whether we like it or not, children--and most adults today--already learn more from television than they do either from school or from books.

- Schools at all levels, public and private, will fight the introduction of electronic technologies bitterly. When all is said and done, the underlying issue really is a matter of replacing people with machines, and the Schools will not take that lying down.

- All the things we fear most in the expansion of electronic technologies are eminently possible. Computers can, for example, be dehumanizing, privacy-robbing, centralized monsters. But they can also be otherwise. Besides, if we held a contest for "Most Dehumanizing Force" between a bad computer and a burnt-out public school teacher, I'd rate the two contestants roughly even.

- Barring a revolution or sudden change in social conscience, new electronic media will bring the greatest benefits to those who least need them. As is presently the case with schooling (among other things) the best will go to the rich, white, and male and the worst to the poor, non-white, and female.[43]

In addition to a clear understanding of assumptions relating to new partnerships in technology transfer in the learning society, guidelines can be specified for such relationships. The National Center for Research in Vocational Education at the Ohio State University undertook a project designed to identify exemplary

programs and practices in postsecondary occupational education and industry cooperation. To gather current information on collaborative practices between postsecondary occupational education and industry, information was solicited directly from the state administrators of two-year colleges in all fifty states. They were asked to nominate colleges within their states that had exemplary collaborative practices with industry. Thirty-nine of the states nominated colleges. The nominated colleges were then sent a questionnaire to provide information about their exemplary collaborative programs and practices. Descriptions were sought concerning the program's activities, process, contributions by both industry and the college, the educational and financial benefits to each, and the critical elements for success. The focus was on the sharing of facilities, equipment, materials, and personnel. Responses were received from 138 colleges, providing descriptions of 219 programs and practices. The project also provided the set of guidelines for industry-education cooperation displayed in FIGURE 5.

The Institutional Commitment to the "Service" Function

Technology transfer within the college should begin with an institutional commitment to the "service" function. This commitment should be reflected in the institution's mission statement, in at least one goal statement, and in the allocation of its resources. A goal statement which indicates that an institution will actively pursue functional relationships with a broad variety of agencies and organizations provides the framework for specific objectives (1) which identify the organizations, (2) develop policy and guidelines, and (3) specify strategy.

FIGURE 5

GUIDELINES FOR INDUSTRY-EDUCATION COOPERATION*

1. There must be good, clear communication between key persons in industry and education. This good communication requires that the persons in industry and education understand each other's roles and responsibilities and what each can offer.

2. Excellence in teaching is essential. The instructor must have knowledge of the business/industry and know how to gain the respect of and relate to the worker-students.

3. There must be institutional flexibility in meeting the needs of industry. There must be flexibility in scheduling courses, in assigning faculty, and locations where courses can be offered. Program times, length, and location must be consistent with user hours and needs. Flexibility is needed also in selecting the mode of instruction, i.e., the delivery system.

4. Programs offered must be of high quality. When the college provides courses for industry, the programs must be up-to-date, relevant, and of high quality. It is particularly effective when the courses are specifically tailored to the needs of the company. All parties should agree on course content.

5. Good, active advisory committees are important. Industry's support and guidance in developing and maintaining programs are essential. There must be willingness of key industry personnel to volunteer time and resources.

6. Education should have a quick response time in meeting industry needs. This requires institutional flexibility and the knowledge and skill of involved college personnel. Short term and modular courses can help provide quick delivery and successful outcomes.

7. There must be recognition of mutual need. To warrant the time, effort, and resources required for collaboration, the needs and benefits must be clearly perceived. The vision and persistence of interested parties is required. It takes the dedication of someone in both education and industry to make it work.

8. The support of administrators and faculty within the college are required to successfully serve industry. Administrators and faculty must see this as part of their institutional mission and recognize the benefits.

9. Careful and thorough planning in each cooperative effort is essential. A good survey of industrial needs and a realignment of educational objectives to meet those needs contribute to successfully serving industry. By careful planning, return on effort is maximized.

10. A clearly written agreement or contract helps achieve successful completion of joint endeavor. When the duties and responsibilities of each party are clearly delineated, misunderstandings are reduced and performance is improved.

11. There should be continued evaluation of the program to update and improve it. By assessing each program as it progresses and at the end of the course of study, content, procedures, and management of effort should improve.

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* Catharine P. Warmbrod et. al., Sharing Resources: Postsecondary Education and Industry Cooperation (Columbus: National Center for Research in Vocational Education, 1981) pp. 117-118.

The specific goal and objectives for functional relationships could be as follows:

GOAL — It is the goal of college over the next six years to pursue functional relationships with a broad variety of agencies and organizations.

OBJECTIVES

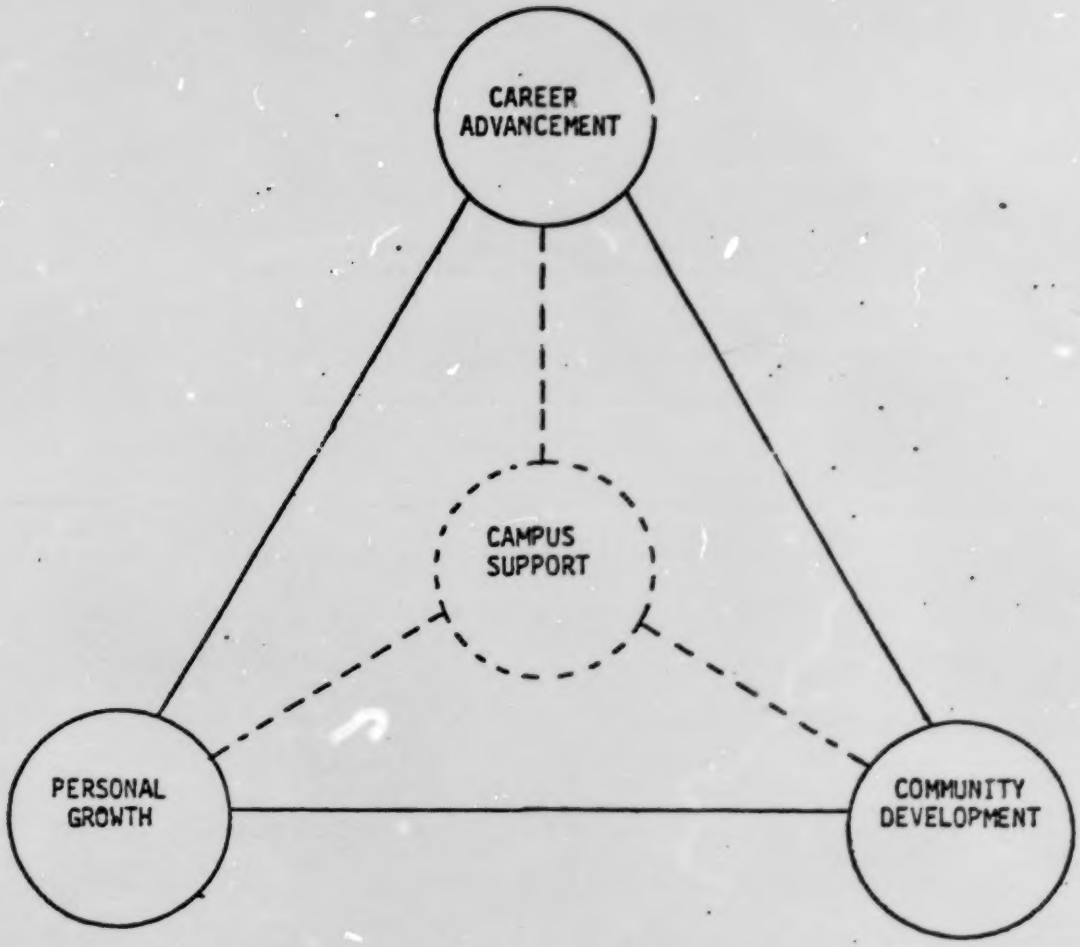
1. To identify agencies and organizations with which the College should have functional relationships - school systems, business and industry, service oriented organizations, and accreditation associations.
2. To develop policy and procedures to provide guidance in pursuing functional relationship.
3. To specify strategy for pursuing a positive functional relationship with selected organizations.

Colleges pass through stages of development as they relate to the primary purposes of instruction, research, and service. A college first develops the infrastructure to manage the academic credit programs within the scope of its mission. Selected curriculum packaging formats require practicum and intern "hands on" experiences in agencies and organizations in the service area. Thus, the institution develops functional relationships and begins the process of technology transfer in an informal manner.

A second stage of development may consist of offering continuing education and non credit programs. An institution in this stage of development is faced with a new set of decisions about "what to do" and "how to do it." Such services can focus on (1) personal growth, (2) career advancement, (3) community development, or other mission priorities. (See FIGURE 6) An institution may decide to offer some programs unilaterally, such as personal growth courses, while offering other programs in concert with other organizations, particularly courses in career advancement and community development. Bilateral relationships can be established at the national, state,and local chapter levels with organizations such as the National Secretaries Association (NSA), U.S. Small Business Administration (SNA), American Management Associations Extension Institute (AMAEI), American Society

FIGURE 6

COMMUNITY EDUCATIONAL SERVICES



Mission Priorities

1) Professional/career/occupational advancement
2) Community development/citizen involvement
3) Personal and family development/security
4) Cultural/technical awareness
5) Energy education/environmental awareness
6) Creative uses of leisure/recreation

for Training and Development (ASTD), American Institute of Banking (AIB), American Institute for Property and Casualty Underwirters (AIPCU), American Production and Inventory Control Society (APICS), Graduate Realtors Institute (GRI), Insurance Institute of America (IIA), American College of Life Underwriters (ACLU), American Society for Quality Control (ASQC), American Society of Transportation and Traffic (ASTT), Data Processing Managers Association (DPMA), Materials Management Institute (MMI), National Association of Accountants (NAA), and other organizations. Although the focus is on educational services, the process of establishing functional relationships has started and technology transfer has expanded to another level.

A third stage of development is the commitment to service in the form of technology transfer. Technology has been defined as a social process which generates and combines know-how and people to extend the physical range of man and a biological process because it enhances people. It consists of all the techniques, knowledge, lore, methods, and tools that have helped society survive and improve its quality of life. A single institution or a consortium of institutions cannot possibly do all things for all people. Even the single purpose institution, such as an agricultural college, must establish a focus based on an assessment of its internal strength and the needs of the service area. A multi purpose institution with a balance of business, engineering, and human and public service programs must establish a focus and priorities based on history and track record of the institution and the needs identified from the mix of business, industry and service agencies and organizations in its district.

Although an agent can facilitate a process, technology transfer will be accomplished through people. Solution to selected engineering problems may require a blend of theoretical understanding, gained from years of formal education, and practical application, gained from years of industrial experience. Solution to selected business management problems may require a blend of the technical aspects

of computers and an understanding of the use of computers in organizations. An agent must have some knowledge about the processes of the agencies and organizations for which technology transfer will take place, the consumer, and some knowldege about strengths and limitations of a broad range of service providers in order to make the best possible match. The agent must be structured in the table of organization so that delivery of service can be handled in an efficient and effective manner.

The institution with a balance of programs in business, engineering, and human and public service which is reflective of the mix of organizations in the area will probably locate the technology transfer agent near the top of table of organization for several reasons. First, the agent must have institutional creditability with the broad range of organizations for which services will be provided. Second, the agent must have flexibility across disciplines to gain access to the service providers - mostly faculty. Third, the agent should have easy access to top leadership who have responsibility for the strategic planning function. Fourth, the agent should be able to interact freely with persons who are already committed to assisting the institution and can help in the process of matching consumer and provider; such groups include the Board of Trustees, institutional and program advisory committees, and alumni and friends of the college. Fifth, the agent should be located in a position to be able to benefit from diagnostic feedback from credit and continuing education courses which are offered for the broad range of consumers in the service area; in some instances technology transfer and education and training must be synchronized to maximize benefits.

Statewide Coordination of Technology Transfer

Just as R and D is undergoing significant change, so too is the process of dissemination and full implementation of the results of R & D. With business and industry focusing its research primarily on short term, applied research, and defensive R & D and deferring basic research largly to government and universities,

there is need to assist that process which extends from basic research to development to dissemination to implementation. In addition, product development in high technology industries requires a level of integration of complicated components that is far more sophisticated today than that required several years ago. This sort of large scale commitment goes beyond a single institution and requires a state-wide effort.

Ohio is a highly-industrialized state that is a national leader in fabricated metals, rubber, plastics, stone, clay and non-electrical machinery. The state, however, faces important economic challenges that include obsolescence in manufacturing facilities, decline in productivity, and below average growth in high technology and service industries. In order to meet these challenges and to provide a climate for business and industry which is supportive and conducive to expansion, the Ohio Board of Regents proposed and the Ohio Legislature funded the Ohio Technology Transfer Organization beginning with the 1979-1981 biennium. This state-wide network consisting of The Ohio State University and two-year institutions working with state and federal agencies is intended to provide small business and industry access to information, advice, and services that are essential to economic development and job growth.

To accomplish this purpose, a full-time technology transfer agent is located on each of eleven two-year college campuses and The Ohio State University. The primary function of the OTTO agent is to assume an active role providing technological assistance to constituents within a geographic region of the state. (See FIGURE 7 ; See Appendix A for the Network of OTTO Institutions) The OTTO agent, whose services are free, acts as a user broker in providing direct access to member colleges and OSU or to alternative sources of assistance. Typical cases might include obtaining information about plastics, corrosion, resource recovery, solar energy, or management assistance in areas such as inventory control, business record keeping, and general management. OTTO agents have

FIGURE 7

OTTO DISTRICTS
1982 - 83
LAKE ERIE
1834154
ASHTABULA
(390418)
LAKE
GEAUGA
TRUMBULL
841115
MAHONING
COLUMBIANA
CARROLL
1437584
HARRISON
JEFFERSON
BELMONT
GUERNSEY
484418
NOBLE
MONROE
WASHINGTON
MORGAN
PERRY
MUSKINGUM
COSHOCTON
(203151)
TUSCARAWAS
KNOX
LICKING
FAIRFIELD
427810
HOCKING
ATHENS
MEIGS
VINTON
ROSS
PICKAWAY
FAYETTE
PIKE
JACKSON
GALLIA
SCIOTO
LAWRENCE
ADAMS
BROWN
HIGHLAND
CLERMONT
HAMILTON
383489
BUTLER
WARREN
CLINTON
GREENE
PREBLE
MONTGOMERY
DARKE
MIERCER
AUGLAIZE
SHELBY
MIAMI
CHAMPAIGN
CLARK
LOGAN
UNION
DELAWARE
MADISON
FRANKLIN
MARION
MORROW
HARDIN
VAN WERT
ALLEN
PAULDING
PUTNAM
DEFIANCE
HENRY
WILLIAMS
FULTON
LUCAS
OTTAWA
WOOD
SANDUSKY
SENECA
(189351)
HANCOCK
WYANDOT
CRAWFORD
RICHLAND
ASHLAND
WAYNE
STARK
HOLMES
ERIE
HURON
LORAIN
CUYAHOGA
PORTAGE
SUMMIT
(772988)
OHIO RIVER
OTTO AGENTS
FUTURE OTTO DISTRICTS

FIGURE 8

OHIO VOCATIONAL - TECHNICAL CONSORTIUM DISTRICTS

access to computerized data bases which can be searched for recently published articles on almost any topic. These data bases include NASA and the National Technical Information Service.

Plans for the 1981-1983 biennium call for the addition of four institutions to the network.

Because of the relationship between technology transfer and training, another effort which deserves mention is the Ohio Vocational/Technical Resource Consortia. In early 1980 the Division of Vocational Education of the Ohio Department of Education initiated a program to link Ohio's extensive public vocational-technical education system to regional and state-level economic development. Local consortia were initiated during 1980 in 23 regions throughout the state. (See FIGURE 8) At the state level the program is coordinated with the Ohio Department of Economic and Community Development, the Ohio Chamber of Commerce, the State Labor Council and other business and labor groups. The state's vocational education division program director works with local communication coordinators responsible for organizing the local consortia.

The principle activities of the operating consortia are: (1) to determine present and future numbers of job openings in various occupations for each consortia service area; (2) to determine training needs for new and existing jobs; (3) to determine the match between training needs and training resources and facilities; and (4) to act as communication forums for all training needs and resources of business, industry, labor, government and education.

Geographically, consortia are composed of 2 or more vocational education planning districts (Ohio is divided into 103 vocational education planning districts - VEPD) including all technical and branch campus facilities within those districts.

A vocational-technical resource consortium consists of facilities and staff of all vocational-technical and university branch campuses. A consortium committee

typically consists of a consortium director and 15-20 senior executives from the area business community, vocational and technical colleges and branch campuses, and organized labor. These consortia are governed by officers elected by the members of the committee and will operate under the sponsorship of the chamber of commerce or educational agencies. To assist the consortium director, housing and staff necessary for the functioning of the consortium will be supplied by the member educational institutions or local chambers of commerce.

The consortia were initially organized using state and federal vocational education funds. Each region received $29,000 and is also supplemented by local contributions for clerical support, supplies, office space and utilities through chambers of commerce and education institutions. Additionally, the state seeks annual appropriations from the state legislature to fund research and training programs operated through the new consortia.

Paralleling OTTO and the OVT Consortia, a series of "linkage" programs was launched including:

> Regional workshops to explore means by which educational institutions can provide better services, to communicate successful programs underway and to serve as a catalyst for future problem-solving activities; (See Appendix B)
>
> Contracts with major trade and professional organizations and governmental agencies to increase awareness of higher education resources and to articulate identified needs to appropriate sectors of higher education;
>
> Survey and publication of postsecondary exemplary services performed for business, industry and government with particular emphasis on resolving production, management or other problems having a economic impact.[44]

The Ohio Board of Regents also conducted a survey of business/industry training programs through forty two-year campuses. The purpose of the survey was to identify and describe the formal training and education programs offered by business, industry, and public employers in Ohio that may be similar to the offerings of postsecondary education institutions. Representatives from the forty participating two-year campuses interviewed officials of firms in their

area employing over 1,000 employees; a questionnaire was sent to firms employing between 250 to 1,000 persons. (See Appendix C) The Ohio Board of Regents analyzed the results with the assistance of Stark Technical College.

In addition, the 1981 Two-Year Campus Spring Leadership Conference was constructed on the theme "Enhancing the Linkages Between Ohio Two-Year Campuses and Local Business, Industry and Government." Sessions were held on the benefits on such linkages, models of linkages, identification of obstacles to linkage activities, and how obstacles can be removed.

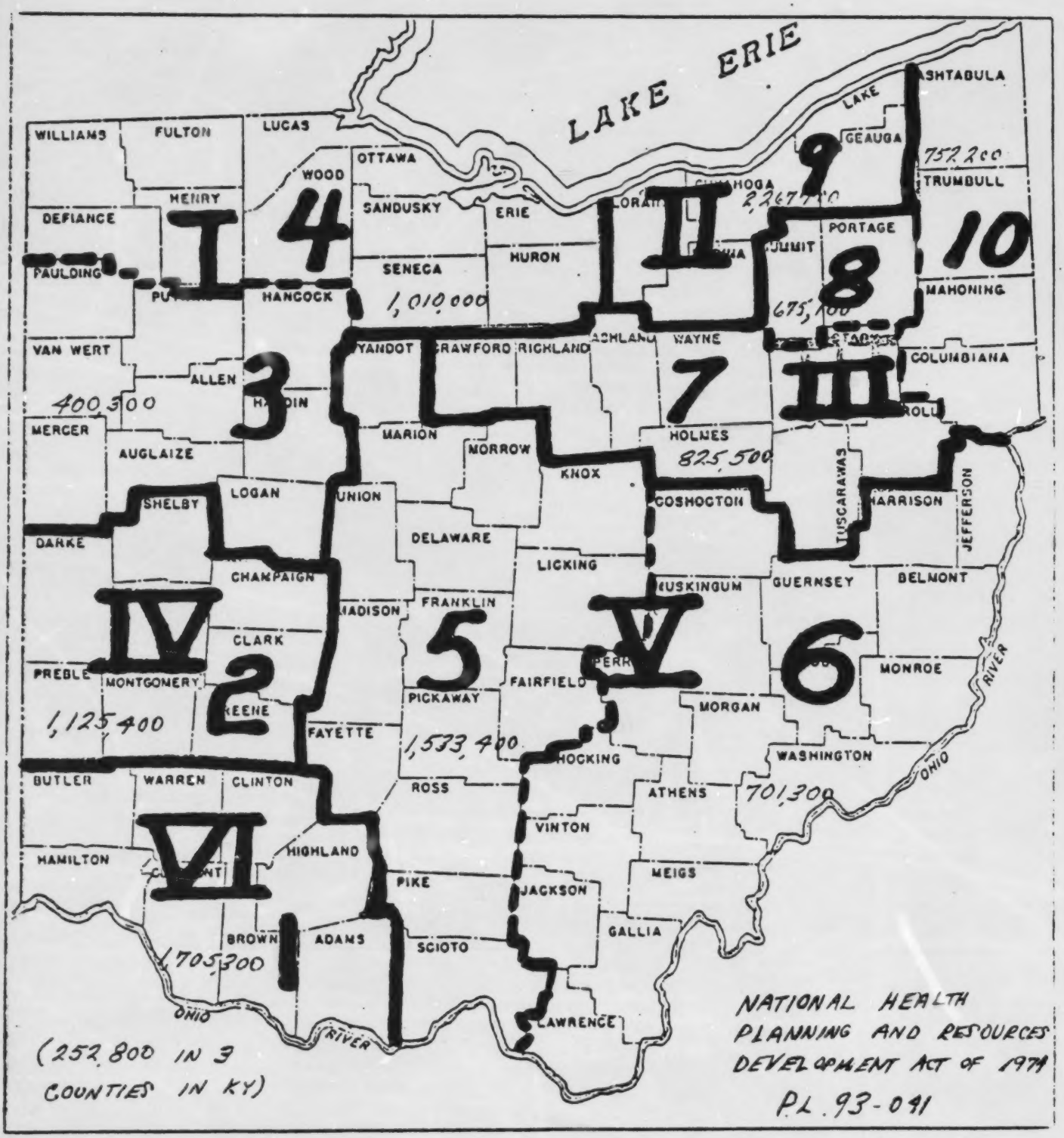
Another activity related to the technology transfer concept was the announcement in early 1981 that Sinclair Community College and Stark Technical College have been selected by the U.S. Small Business Administration (USSBA) to be among 100 community colleges in a national small business training network. This project is in response to the national call for innovative, cost-effective strategies for reducing the high percentage of business failure. Colleges will work with management assistance personnel in the 65 USSBA field offices to identify and deliver quality short-term training to meet the needs of local entrepreneurs. Special emphasis will be given to the needs of women and minority small business firms.

A major focus of technology transfer relates to productivity. Because the rate of production in the United States leveled off in the 1970s, productivity has become a major economic issue. Poor employee health is a major contributor to lost productivity due to absenteeism, disability, accidents, preventable death, and early retirement. Business pays for nearly 25% of our nation's total health care bill which was $212 billion in 1979. Many businesses can realize substantial savings through employee health prevention programs to combat diseases linked to smoking, poor diets, alcoholism, stress, and other lifestyle factors amenable to change. Therefore, it is most appropriate to include in this discussion some comments on technology transfer as it relates to the health education and service delivery systems.

The Ohio Board of Regents 1976 Master Plan divided the state into six health

FIGURE 9

HEALTH EDUCATION REGIONS OF OHIO



I-VI HEALTH EDUCATION REGIONS

1-10 HEALTH SERVICE AREAS

P.L. 96-79

manpower education regions.[45] The regional concept of health manpower education and health care delivery was developed through discussions with professional groups, directors of health science education programs, the deans of medical schools, administrators of universities and colleges, and allied health professionals. The regional concept is also embodied in the National Health Planning and Resources Development Act of 1974 (P.L. 93-641 and P.L. 96-79) which established approximately 200 Health Systems Agencies (HSAs) across this nation. Ten such HSA districts were set up in Ohio and the six health manpower education regions were carefully drawn to avoid dividing any of these districts. (See FIGURE 9)

A medical school is the flagship institution in each of the health manpower education regions. By region they are as follows:

I. Medical College of Ohio at Toledo

II. Case Western Reserve University

III. Northeastern Ohio Universities College of Medicine

IV. Wright State University School of Medicine

V. The Ohio State University College of Medicine

VI. University of Cincinnati College of Medicine

The Ohio University College of Osteopathic Medicine in Athens uses the entire state for clinical purposes. Ohio's regional design offers the following advantages.

1. Inter-institutional planning and cooperation to avoid the unnecessary duplication of health care programs.
2. The development of a planning mechanism linking health personnel production and utilization with the resources to achieve goals in these areas.
3. Development of coordination in the use of clinical facilities among all of the health personnel education programs.
4. A mechanism for the coordination of primary care residency programs (family medicine, general internal medicine and general pediatrics) among the medical schools, their health science centers and community hospitals and clinics.
5. Coordination of continuing education programs on a regional basis to respond to the needs of all health care professionals in the area. Many regulatory agencies and legislative enactments mandate this education; physicians, for example, are required by Ohio law to have 150 credits of continuing education every three years.

During 1976-77, the Ohio Board of Regents appointed a State-Wide Regional Medical Program Planning Advisory Committee comprised of two representatives from each of the six regions. After meeting several times, the committee's name was changed to the Area Health Education Centers Advisory Council. This Council developed a proposal to create the Ohio Consortium of Area Health Education Centers (AHECs) which submitted to the Bureau of Health Manpower. The Department of Health, Education and Welfare funded a one-year planning project starting September 1978 for $626,000. Since then the AHEC program received additional awards including $5,294,342 in 1980-81. The prime contractor is the University of Cincinnati College of Medicine.

From the Federal Government perspective, P.L. 96-79 states:

> "The Congress finds that the following deserve priority consideration in the formulation of National health planning goals and in the development and operation of Federal, State, and area health planning and resource development programs:
>
> 1. The provision of primary care services for medically underserved populations.
> 2. The development of multi-institutional systems for coordination or consolidation of institutional health services.
> 3. The development of medical group practices, health maintenance organizations.
> 4. The training and increased utilization of non-physician providers.
> 5. The development of multi-institutional arrangements for the sharing of support services.
> 6. Improvements in the quality of health services.
> 7. Health service institutions of the capacity to provide various levels of care.
> 8. Promotion of activities for the prevention of disease.
> 9. Adoption of uniform cost accounting, simplified reimbursement.
> 10. Effective methods of educating the general public.
> 11. Effective energy conservation.
> 12. Identification and discontinuance of duplicative or unneeded services and facilities.

13. Policies to contain costs, insure appropriate use, promote greater efficiency.

14. Elimination of inappropriate placement in institutions of persons with mental health problems, and the improvement of the quality of institutions.

15. Access to community mental health centers and other mental health care providers.

16. Health services cognizant of the emotional and psychological components.

17. Strengthening of competitive forces in the health services industry wherever competition and consumer choice can constructively serve to advance the purposes of quality assurance, cost effectiveness, and access."

At the state level, the Ohio Statewide Health Coordinating Council (SHCC) has developed a list of priorities based on a number of needs identified by the various HSAs, the Governor, the Ohio Legislature, state health-related agencies, and the National Priorities. These Statewide Priorities are as follows:

1. Reduction in the number of acute care beds in the state

2. Availability of comprehensive emergency medical services

3. Promotion of environmental health

4. Availability of comprehensive health education services

5. Availability and accessibility of home health services and other alternatives to institutionalized care

6. Availability of family health services

7. Availability of mental health services

8. Availability of nutrition services

9. Availability and accessibility of primary care services

10. Availability and accessibility of screening services

11. Availability and accessibility for comprehensive substance abuse services

Several HSAs have established health education and health promotion goals and have undertaken activities to market these concepts in elementary and secondary schools,

business and industry, and health care service facilities. The Health Planning and Development Council (HPDC) located in Wooster developed a questionnaire concerning employee health promotion and sent it to a sample of 80 companies in the eight county area. (See Appendix D) The survey included all 48 companies with 500 or more employees plus a randomly selected group of 32 companies employing between 100 and 500 workers. According to the 1981 Ohio Industrial Directory there are a total of 226 firms employing 100 or more workers in the eight counties. In addition, the HPDC has conducted seminars and workshops on a broad range of topics including long range planning for hospital trustees, medical staffs, and interested citizens. It has also analyzed critically The Health Maintenance Organization Option[46] and Who Responds To The Behavioral Emergency?,[47] the latter a product of an interdisciplinary team comprised of representatives from mental health, alcohol, and drug agencies. The HPDC has also organized a Network of Certified Home Health Agencies in the Ohio Health Service Area VII and supported the Platform State for the 1980s of the Association of Ohio Health Commissioners. (See Appendix E)[48]

Another area of technology transfer in which several two-year colleges are involved is the Nursing Home Area Training Center Project. Five area training Centers were established in 1973, four of which survived when federal funds ended in 1974. Four additional Centers were developed in 1978. Resources to operate the Centers have come from federal comprehensive health grant funds allocated to the Ohio Department of Health, the Ohio Commission on Aging, and local funds obtained through registration fees. A ninth Center in northwest Ohio began operation in October 1979 and the tenth Center serving northcentral Ohio was added in October 1980. (See FIGURE 10 and Appendix F)

Although no attempt has been made to provide detailed information about each of these areas of involvement in technology transfer, one begins to get a feel for the complexity of managing these efforts. No attempt has been made to discuss mental health, alcohol, and drug agencies or unique differences between primary, secondary,

FIGURE 10

NURSING HOME AREA TRAINING CENTERS

Areas Served FY 1981

OHIO DEPARTMENT OF HEALTH

and tertiary care facilities. When these agencies and facilities are added to the mix and coupled with the revolutions of deinstitutionalization and the shift from an "illness" to a "wellness" oriented system of health care service delivery, the problems of managing technology transfer are almost incomprehensible.

Technological and Managerial Obsolescence

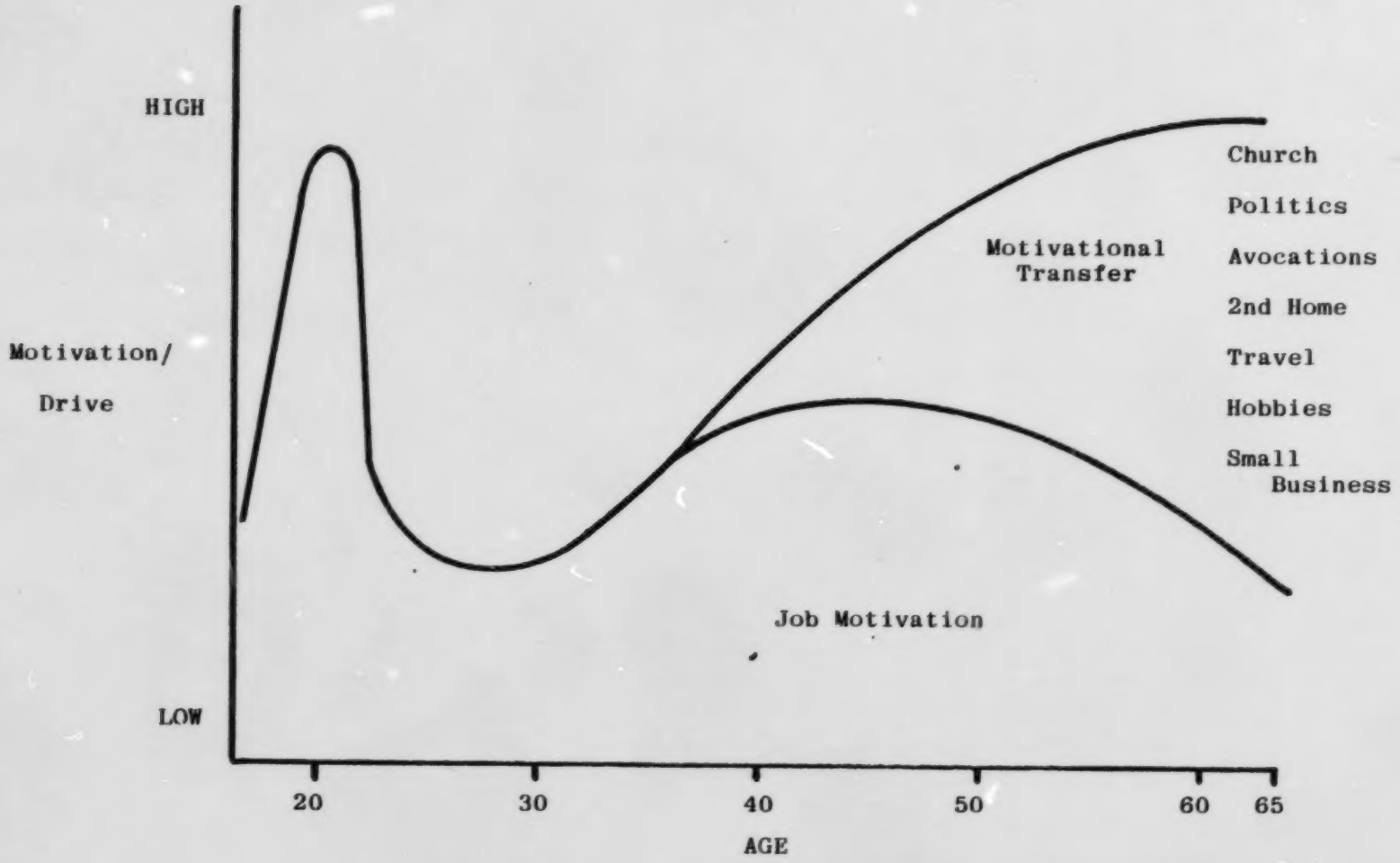
No discussion on technology transfer would be complete without some comment about technological and managerial obsolescence. Technology transfer is people centered. As was indicated earlier, the definition of technology goes beyond machines and tools and extends to what people do with what they know. Obsolescence as it relates to machines and tools needs no comment in this discussion. With regard to person-centered obsolescence, Hux states:

> Obsolescence exists when the employee lacks the skills necessary to meet current performance expectations. Employee obsolescence can be related to a number of phenomena; it seems, however, to be largely a function of either technology, promotion to a level of incompetence, or the aging process. Recognition is one thing; what to do about the problem is, or should be, of major concern not only to the business world, but also to those in technical education.[49]

At an American Technical Education Association Atlantic Regional Conference, Jack Ellis, Information Systems Education Manager for the Western Electric Corporate Education Center, made a presentation on technological and managerial obsolescence from the industrial perspective. From a detailed analysis of the literature, Mr. Ellis estimated that in most technical and managerial areas, obsolescence usually occurs within five years and is attributable to a number of factors. (See FIGURE 11 and Appendix G) He indicated that until recent years industry viewed the employee as an operating expense; maintenance of technical and managerial competency was deemed to be primarily the responsibility of the employee. Forward thinking firms, however, are beginning to change philosophy, beginning to view employees as capital assets which require attention like other valuable investments.

FIGURE 11

ENGINEERING CAREER LIFE CYCLE - I



Source: Thurman Hux, "Technological/Managerial Obsolescence," American Technical Education Journal (March-April, 1979) Vol. 6, No. 5, pp. 9-10.

Mr. Ellis stated that research studies seem to indicate that employee problems (obsolescence, turnover, absenteeism) are closely related to discontinuity in career development. He recommended taking appropriate intervention action at critical career stages to prevent or alleviate problems. He suggested intervention should occur at at least two points. (See FIGURE 12) First, many new employees experience "reality shock" of first employment; intervention strategies could include coaching, group meetings, or assigning the new employee to an experienced co-worker. A second point of intervention is approximately age 45; intervention strategies could include possible job rotation, assigning training duties and community works. Pairing new and experienced employees not only helps to reduce the reality shock, it allows the mature employee to serve as a good role model and pass on some of his/her knowledge about the company.

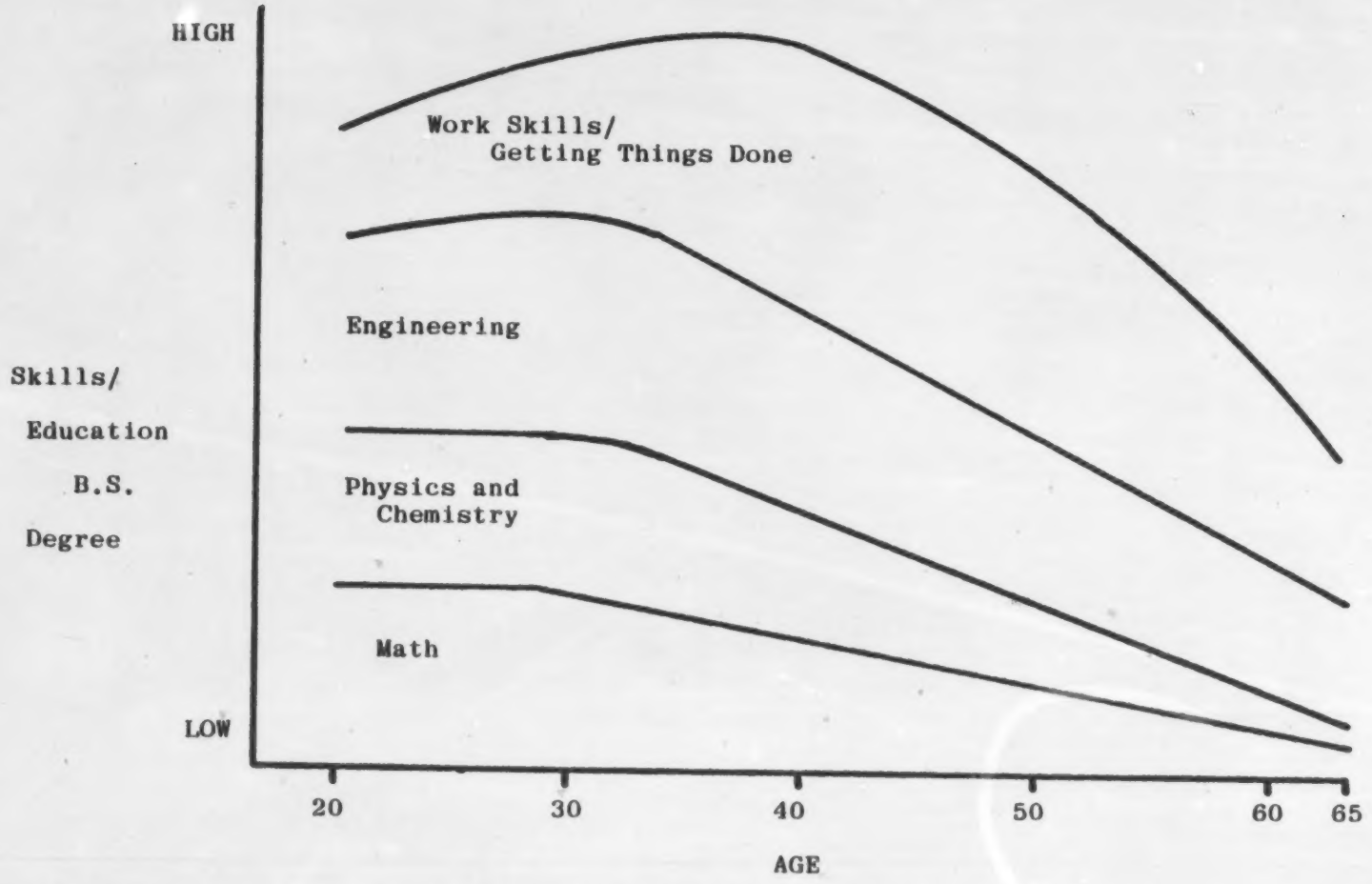
Prevention vs Rehabilitation

Between August 1978 and December 1979, North Central Technical College was involved in a project to retrain the unemployed in Richland County. Laudable and necessary as the project was, it represented a tertiary rehabilitation model as opposed to a primary or secondary prevention model. The intervention strategy was the result of a crisis as opposed to a process designed to diagnose a potential problem and prevent the development of the malady. Nor was it a secondary prevention model, that of identification of an illness at an early stage in order to prevent its complication. The intervention occurred only after the crisis struck the fatal blow even though early warning signals had been transmitted over the past several years.[50] (See Appendix H)

Some of the early warning signals have been flashing quite regularly in recent years and seem to be growing both in frequency and intensity. On the national level a recent labor-backed study contends that an epidemic of plant shutdowns is sweeping the nation, with companies moving factories and leaving behind a trail of human and community devastation. The study reports that between 1969 and 1976, plant shutdowns

FIGURE 12

ENGINEERING CAREER LIFE CYCLE- II



Source: Thurman Hux, "Technological/Managerial Obsolescence," American Technical Education Journal (March-April, 1979) Vol. 6, No. 5, pp. 9-10.

and relocations eliminated 15 million jobs and created 16.4 million new ones, a slight net increase overall.[51] The new jobs on the average, however, were lower-paying and in different regions of the country and did not go to the people who were left unemployed by shutdowns in the first place. The impact of this phenomenon was detailed in articles in The New York Times Magazine and the AFL-CIO American Federationist.[52]

In Ohio, 15,000 jobs were lost in 1976, including 8,000 when Dayton's Frigidaire plant closed its doors. During 1977 and 1978 nearly 17,000 jobs were lost as a result of plant closings or partial closings; the biggest loss was the closing of Youngstown Sheet and Tube which put 5,000 people out of work.[53] Two Swedish researchers working at the Center for Working Life toured Northeast Ohio in February 1981. Anna Karlstedt and Lena Gonas were shocked to find that the U.S. has no legislation to deal with these large scale community crises. The visitors explained that in Sweden, a decision to close a plant must be approved by a local board consisting of representatives from labor, management and the government.[54]

Other research data suggest that our future is, for the most part, dependent upon the preservation, expansion, and creation of small businesses. "A recent study by the Office of Management and Budget found that small businesses tend to be more innovative, despite the government's preference for giant corporations in handing out research funds. The study found that small businesses accounted for almost half of all major innovations in the 1953-73 period and produced four times as many innovations per researcher as big business at a cost per scientist or engineer only half that of big business."[55] In Ohio, the 189,000 small firms created 66 percent of all new jobs in the private sector between 1969 and 1976; 80 percent of new jobs came from businesses less than five years old. Fifty percent of the state's workforce is classified as employed by small business; these firms generate 51 percent of the gross state product. Small businesses, however, have demonstrated they are unable to afford the type of assistance which is usually available to large corporations.[56]

Conclusions

1. The future of any institution, including postsecondary education, rests on the degree to which it meets the needs of the society in which it exists. As society changes, so must higher education change. If higher education is to remain a viable institution, it must be responsive to the needs of society. The way in which a specific college or a postsecondary education system meets the challenge of being responsive to societal needs is a function, for the most part, of its sophistication in planning: comprehensive, strategic, long-range, and systematic. As critical as institutional planning is to a college's or a system's survival, however, only a very small number have effectively developed a plan, based on sound data about themselves and their setting, which is revised at least annually and upon which the institution's leadership acts daily. A 1974 Ohio Citizen's Task Force on Higher Education and the 1976 Ohio Board of Regents Master Plan identify paramount goals for Ohio's diverse structure of higher education and call for a shift from episodic, periodic production of master plans once every five years to a continuous systemic mode of planning.[57] It has not done that. Although there are references to themes such as (1) an emphasis on quality, (2) a new social contract through linkages, and (3) a call for a systems approach to planning, I see little evidence in a policy or operational commitment that suggests in the foreseeable future that we are going to change our mode of operation.

2. The second conclusion stems from the first. The three paramount goals for Ohio's diverse system of higher education referred to above are (1) equal access to higher education for all persons, (2) life long learning opportunities for all ages, and (3) emphasis on excellence in higher education through planning and adequate financing. Planning and management systems have evolved into the strategic concept. Long-range planning of the 1960s assumed a closed system and yielded five to ten year blueprints with a focus on physical plant expansion and fiscal elements.

"Strategic planning assumes an open system in which organizations are dynamic and constantly changing as they integrate information from turbulent environments. Strategic planning focuses on the external environment, on qualitative information and intuitive decisions regarding resource commitments, and on integrated, participatory involvement."[58] The tools of strategic planning include needs assessment, trend analysis, environmental scanning, and market analysis. These tools are applied in organizations at different stages of development (emergence, growth, development, regeneration, decline) and that operate in ways that can be classified as theory X, theory Y, or political/collective bargaining. Only when we make a statewide commitment, through policy and resources, to the strategic planning concept will we have maximum impact through technology transfer on the quality of life.

3. The commitment to technology transfer must include programming to understand fundamental concepts. If one is to be reasonably successful in helping people or organizations to change, one must be a diagnostician as it relates to cycles and stages of development. The concept of cycles and stages of development can be applied to every aspect of an organization - the corporate structure, policy development, management functions including corporate data management and decision making, the dynamics of the product life cycle from R & D to dissemination through marketing, labor-management relationships including organizational climate and quality of life issues, and human resources development including career life planning and matching individual and organizational needs. Such programming should include a critical analysis of information produced by the Office of Technology Assessment of the Congress of the United States and could include conferences such as the "Showcase for Technology" in Albuquerque under the joint sponsorship of Senator Harrison Schmitt, U.S. Department of Energy, Los Alamos National Laboratory, Federal Laboratory Consortium, and Saudia National Laboratories.

4. Technology transfer in the learning society can be enhanced if there is collaboration and new partnerships which are developed between secondary and post-

secondary schools; within and between colleges; business, industry, and community organizations; telecommunications; and professional associations, particularly the American Society for Training and Development. The vocational-technical consortium district is an example of the first new partnership and OTTO is an example of the second. The Small Business Act (Public Law 96-302) and the Stevenson-Wydler Technology Innovation Act of 1980 (Public Law 96-480) could provide the imputus for postsecondary education and industry relationships. If technology transfer is to have the synergistic effect it should have, however, the professional associations should be encouraged to dedicate some of their programs to the topic. At the state level, consider the potential for the Ohio Conference for College and University Planning; the Ohio Council for Interinstitutional Research; the Ohio Association for Staff, Program, and Organizational Development; the Technical Education Division of the Ohio Vocational Association; the Ohio Association of Two-Year Colleges; and the numerious other associations. The same would hold for national organizations. The American Association of Community and Junior Colleges, the American Vocational Association, and the American Society for Training and Development could develop joint programming beyond the capability of the individual states or the smaller professional organizations.

Secondary and post secondary education in Ohio is in the early stages of trying to be responsive to the changing needs of the state. Much of what is being done at the postsecondary level is being coordinated by top level persons on the Chancellor's staff, an "add on" to already busy individuals. At the local level these efforts often appear disjointed and fragmented. The strategic planning and management focus requires a full-time vice chancellor who can coordinate master planning with the assistance of an advisory committee comprised of top level representatives of business and industry and state government. This person could assist institutions to develop a strategic planning and management capability through workshops and individual consultation. In addition, this person could coordinate workshops on technology transfer, including showcase conferences, and human resource development workshops in conjunction with professional organization.

During recent years many Americans have become concerned about the "return" of their investment in postsecondary education. Demands for accountability from tax payers provide cause to ask "Is our investment in colleges worth the time and money in terms of value added to society?" Several researchers have presented data about the benefits of college for individuals and the returns to society in general.[59] In the 1977 May/June issue of Social Policy, Brummer reported a study about the relationship between unemployment and stress related illnesses. He states,

> The 1.4 percent rise in unemployment during 1970 has cost our society nearly $7 billion in lost income due to illness and mortality, and in added state prison and mental hospital outlays. To this must be added public outlays of some 2.8 billion annually over the 1970 to 1975 period for jobless and welfare payments associated with the sustained 1.4 percent rise in unemployment.

This country, and, in particular, Ohio, cannot afford the human and economic toll that is being inflicted because of its ommission to strategic planning and management. We have the tools, do we have the will?

FOOTNOTES

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The American Council on Education
The American Council of Learned Societies
The Association of American Universities
The National Association of State Universities and Land-Grant Colleges
The Social Science Research Council

The National Commission on Research issued the following reports:

1. Accountability: Restoring the Quality of the Partnership
2. Funding Mechanisms: Balancing Objectives and Resources in University Research
3. Review Processes: Assessing the Quality of Research Proposals

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APPENDIX A

NETWORK OF OTTO INSTITUTIONS

Cincinnati Technical College,
3520 Central Parkway, Cincinnati 45223
(513) 559-1520

Clark Technical College, P. O. Box 570
100 South Limestone Street, Springfield 45502
(513) 325-0691

Columbus Technical Institute
550 East Spring Street, Columbus 43215
(614) 227-2440

Cuyahoga Community College
25444 Harvard Road, Warrensville 44122
(216) 464-1450

Edison State Community College
1973 Edison Drive, Piqua 45356
(513) 778-8600

Hocking Technical College
Route #1, Nelsonville 45764
(614) 753-3591

Lorain County Community College
1005 North Abbe Road, Elyria 44035
(216) 365-4191

Muskingum Area Technical College
1555 Newark Road, Zanesville 43701
(614) 454-2501

Owens Technical College
526 High Street, Toledo 43609
(419) 255-6071

Sinclair Community College
444 West Third Street, Dayton 45402
(513) 226-7973

Stark Technical College
6200 Frank Avenue, N.W., Canton 44720
(216) 494-6170

The Ohio State University
1712 Neil Avenue, Columbus 43210
(614) 422-5485

APPENDIX B

LIST OF REGIONAL LINKAGE WORKSHOPS

1. May 4-5, 1981 - Columbus

   "Linkages in Human Resource Development: Combining the Resources of Work and Education to Solve Problems."

2. May 14-15, 1981 - Columbus

   "Spring Conference 1981: The Ohio Continuing Education Council"

3. May 28, 1981 - Cincinnati (Greater Cincinnati Consortium of Colleges and Universities)

   "Lingages: Higher Education/Business/Industry/Government"

4. June 3-4, 1981 - Cleveland

   "Conference on Linkages Between Higher Education and Business/Industry/Labor in Cuyahoga, Lake and Lorain Counties"

5. June 25-26, 1981 - Cincinnati

   "Strategies: Meeting the Needs of Adult Learners in Higher Education and the Workplace."

6. September 1, 1981 - Hocking

7. September 10. 1981 - Toledo

   "Financial Problems of Small Business and Higher Education"

OHIO BOARD OF REGENTS

APPENDIX C

OFFICE OF TWO-YEAR CAMPUSES

A SURVEY OF ORGANIZATIONAL TRAINING AND EDUCATIONAL PROGRAMS

(1) College ___
(2) SIC ___
(3) Inty'r ___
(4) M/Ques ___

The intent of this survey is to identify and describe the formal training and educational programs offered by business, industry, and public employers in Ohio that may be similar to the offerings of colleges, universities or other post-secondary institutions. Your assistance in providing the information requested will be appreciated.

DO NOT RESPOND TO CONFIDENTIAL ITEMS

(5)_____ company (6)_____ address

(7)_____ city (8)_____ state (9)_____ zip (10)_____ date

(11)_____ responding official (12)_____ no. of employees (13)_____ phone

		Yes (✓)	No (✓)
1.0	Are formal training or educational programs offered by your company or agency in Ohio? If No, proceed to item 12.0. (1.0)	( )	( )
2.0	Kind of Training Offered:		
2.1	Professional or managerial preparation. (2.1)	( )	( )
2.2	Upper or graduate level technical or scientific training in the sciences, engineering, or other disciplines. (2.2)	( )	( )
2.3	Technical training in company methods, practices, and equipment primarily for semi-professional level aides or technicians. (2.3)	( )	( )
2.4	Supervisory and/or mid-management training. (2.4)	( )	( )
2.5	On-the-job training for production, office, technical and/or skilled trades employees. (2.5)	( )	( )
2.6	Apprenticeship program (s). (2.6)	( )	( )
2.7	Personal improvement and cultural appreciation programs and courses. (2.7)	( )	( )
2.8	General and/or basic education especially for high school non-graduates. (2.8)	( )	( )
2.9	Other (please specify: _____		
3.0	Location of your training facilities:		
3.1	At this company/agency facility. (3.1)	( )	( )
3.2	At other company/agency locations in Ohio. Please list: (3.2)	( )	( )

3.21 _____ Office/Firm/Agency _____ Contact Person

_____ Address _____ Title

_____ City _____ Zip _____ Phone

3.22 _____ Office/Firm/Agency _____ Contact Person

_____ Address _____ Title

_____ City _____ Zip _____ Phone

Additional items on back of page:

		Yes (✓)	No (✓)
4.0	Clientele Served:		
4.1	Employees	(4.1) ( )	( )
4.2	Dependents of Employees	(4.2) ( )	( )
4.3	Employees of other firms and organizations via contract	(4.3) ( )	( )
4.4	Other (Please specify) _____		
	_____		
5.0	Organization of Instruction (exclude on-the-job training or O.J.T.):		
5.1	Short term workshops, conferences, and seminars (maximum duration, 3 weeks).	(5.1) ( )	( )
5.2	Formal classes and courses scheduled over several weeks or months.	(5.2) ( )	( )
5.3	Other formal classes and courses: _____		
	_____		
6.0	Instructional Staffing (of 5.1 through 5.3):		
6.1	Special outside consultants or instructors hired by the company for each program or course.	(6.1) ( )	( )
6.2	Staff members of the company/agency training department (s).	(6.2) ( )	( )
6.3	Other employees not a part of the company/agency training Department (s).	(6.3) ( )	( )
6.4	Faculty members from neighboring colleges.	(6.4) ( )	( )
6.5	Other (please specify)_____		
7.0	Instructional Schedules		
7.1	On employee time.	(7.1) ( )	( )
7.2	On company time.	(7.2) ( )	( )
7.3	On a combination of employee time and company/agency time.	(7.3) ( )	( )
7.4	Other arrangements (please describe). _____		
	_____		
8.0	Size of Training Effort		
8.1	Number of employees and others enrolled annually in courses or programs conducted or sponsored by the company/agency (exclude regular college course enrollment). Check one item (✓):		
8.11	1-50	(8.11) ( )	
8.12	51-200	(8.12) ( )	
8.13	201-500	(8.13) ( )	
8.14	More than 500	(8.14) ( )	
8.2	Number of company/agency employees hired annually as instructors (exclude O.J.T. supervision). Check one item (✓):		
8.21	1-3	(8.21) ( )	
8.22	4-10	(8.22) ( )	
8.23	11-20	(8.23) ( )	
8.24	More than 20	(8.24) ( )	

(✓) (✓)

8.0 Size of Training Effort (continued)

8.3 Number of professionals planning and managing training programs of the company/agency. Check one item (✓):

8.31 1-3	(8.31)	( )
8.32 4-10	(8.32)	( )
8.33 11-20	(8.33)	( )
8.34 More than 20	(8.34)	( )

8.4 Estimated percentage of your organization's total training currently done by the company/agency is (8.4)___%

8.5 The portion of the company/agency training effort that is, or could be contracted by outside consultants, is (8.5)___%

9.0 Degrees and Certificates Awarded:

9.1 Diplomas or completion certificates are awarded upon successful completion of each course, seminar, or workshop. (9.1) ( ) ( )

9.2 Formal arrangements exist for awarding or transferring credit toward an associate (2-year) degree in a college or university branch campus. (9.2) ( ) ( )

Please name colleges or universities involved:_____

_____

9.3 Formal arrangements exist for awarding or transferring credit toward a baccalaureate degree in a college or university. (9.3) ( ) ( )

Please name colleges or universities involved:_____

_____

9.4 Formal arrangements exist for awarding or transferring credit toward a graduate degree in a college or university. (9.4) ( ) ( )

Please name colleges on universities involved and the degree (M.S., M.A., Ph.D. etc.) to which credit can be applied:

College/University	Degree
_____	_____
_____	_____

10.0 Cooperative Agreements/Contracts with Colleges, Universities, and Other Post-Secondary Schools:

10.1 Agreement (s) or contracts to provide instructional programs for company/agency employees are in effect. If Yes, list institutions: (10.1) ( ) ( )

College/University	Program Provided
_____	_____
_____	_____

Additional items on back of page:

Yes No
( ) ( )

11.0 Accreditations, Registrations, and Approvals

11.1 Accreditation, certification, approval, or other formal recognition by professional, scientific, educational, or governmental agencies has been awarded. If Yes, please list the program (s) and approval or certifying agency or organization involved. (11.1)( ) ( )

Training Program	Agency
_____	_____
_____	_____

12.0 College Fee Reimbursement for Employees

12.1 The company/agency maintains a policy through which employees are reimbursed for successful completion of college courses and programs. (12.1) ( ) ( )

12.2 Employee enrollment and reimbursement for college courses generally is

12.21 Encouraged and approved for all or most employees (12.21) ( ) ( )
12.22 Approved only when job or promotion requirements dictate the need. (12.22) ( ) ( )
12.23 Approved only when recommended by a superior (12.23) ( ) ( )
12.24 Other (please specify)_____

_____

_____

13.0 Training Needed:

Please list any training needs that could be discussed with a college official:

_____

_____

_____

_____

_____

NOTES AND COMMENTS

_____

_____

_____

_____

_____

_____

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_____

_____

_____

APPENDIX D

EMPLOYEE HEALTH PROMOTION SERVICES

This questionnaire is being distributed to selected employers in the counties of: Ashland, Carroll, Crawford, Holmes, Richland, Stark, Tuscarawas, and Wayne. The purpose of the questionnaire is to provide a measure of the interest which exists in the subject of employee health promotion services. If sufficient interest is expressed by area employers, then we intend to develop a workshop or provide educational material to assist employers in this area. This questionnaire is being distributed by the Health Planning and Development Council of Wooster, Ohio.

_____

Name of Corporation

_____

Mailing Address

_____

1. Does your firm currently provide services which are designed to promote improved health among your employees? Such services as hypertension screening, cancer screening, health education, smoking cessation, physical exercise, stress management training, nutrition, weight control and alcoholism control are included within the definition of employee health promotion.

   ☐ yes ☐ no ☐ not certain

   If yes, please provide a brief description of these services.

   _____

   _____

   _____

   _____

2. Do you feel that health promotion services are or could be of benefit to your organization and your employees?

   ☐ yes ☐ no ☐ not certain

3. Do you feel that health promotion services could be designed to help address the problems of:

Employee Morale:	☐ yes	☐ no	☐ not certain
Employee Absenteeism:	☐ yes	☐ no	☐ not certain
Workers Compensation Costs:	☐ yes	☐ no	☐ not certain
Early Retirement:	☐ yes	☐ no	☐ not certain
Accidents:	☐ yes	☐ no	☐ not certain
Improved Productivity:	☐ yes	☐ no	☐ not certain

4. Would you like to receive additional information about the concepts of employee health promotion?

☐ yes ☐ no

5. If yes, which types of information would be most helpful?

☐ Examples of the types of services which might be included in an employee wellness program.

☐ Examples of successful employee wellness programs elsewhere.

☐ The potential benefits of health promotion services.

☐ The cost of employee illness.

☐ Other (please specify):

_____

_____

_____

6. Would you or a representative be available to attend a one day conference on the subject of employee wellness if one were offered near you.

☐ yes ☐ no ☐ not certain

7. Would you or a representative be available to provide assistance and advice in developing efforts in the community to promote the development of disease prevention/health promotion programs?

☐ yes ☐ no ☐ not certain

8. Please identify the name and address of the person in your organization who is the most appropriate for us to communicate with on this subject in the future.

_____

_____

_____

9. Please offer any additional comments, suggestions or questions which you may have on the subject of disease prevention/health promotion.

_____

_____

_____

_____

_____

_____

_____

_____

_____

Return Completed Questionnaire
in Envelope Provided
by Friday, May 8, 1981
to
Robert Groves
Health Planning and Development Council
405 W. Liberty St.
Wooster, Ohio 44691
(216)264-9939

Completed By:_____ Title:_____

Telephone:_____

APPENDIX E

PLATFORM STATEMENT FOR THE 1980'S

I. Preamble

II. Introduction To A Health Policy

III. The Role of Local Health Departments

A. Personal Health Services

1. Prevention and Primary Ambulatory Care
2. Maternal and Child Health
3. School Health
4. Chronic Disease Control
5. Geriatric Health Services
6. Nutrition
7. Generic Disease Services
8. Dental Health
9. Home Health Care
10. Emergency Medical Services

B. Community Health Services

1. Health Education
2. Environmental Health
3. Safety and Accident Prevention
4. General Communicable Disease Control
5. Sexually Transmitted Disease Control

IV. The Role of the Ohio Department of Health

V. Structure and Authority of Local Health Districts

VI. Standards for Local Public Health Services

VII. Health Planning

VIII. Public Health Teaching and Research

IX. The Association of Ohio Health Commissioners

APPENDIX F

NURSING HOME AREA TRAINING CENTERS

Areas Served FY 1981

OHIO DEPARTMENT OF HEALTH

OHIO DEPARTMENT OF HEALTH
Division of Nursing

Nursing Home Area Training Center Project

NAME	WORK ADDRESS & TELEPHONE	COUNTIES
Donna Algase	Michael J. Owens Technical College Caller No. 10000 Oregon Road Toledo, Ohio 43699 419/666-0580, Ext. 252	Allen, Defiance, Fulton, Hancock, Hardin, Henry, Lucas, Paulding, Putnam, Van Wert, Williams, Wood
Tom Blaney	North Central Technical College 2441 Kenwood Circle P.O. Box 698 Mansfield, Ohio 44901 419/747-4999, Ext. 316	Ashland, Crawford, Erie, Huron, Lorain, Ottawa, Richland, Sandusky, Seneca, Wyandot
Judy Carroll	Edison State Community College 1973 Edison Drive Piqua, Ohio 45356 513/778-8600, Ext. 230	Auglaize, Champaign, Clark, Darke, Greene, Mercer, Miami, Montgomery, Preble, Shelby
Genevieve Gipson	The University of Akron Continuing Education Building Akron, Ohio 44325 216/375-7833	Mahoning, Medina, Portage, Stark, Summit, Wayne
Joan Harkulich	Menorah Park - Jewish Home for Aged 27100 Cedar Road Beachwood, Ohio 44122 216/831-6500	Ashtabula, Cuyahoga, Geauga, Lake, Trumbull
Laureen Keller	Newark Healthcare Centre 75 McMillen Drive Newark, Ohio 43055 614/344-9533 614/344-0357 (messages)	Athens, Coshocton, Fairfield, Guernsey, Hocking, Knox, Licking, Meigs, Morgan, Muskingum, Noble, Perry, Washington
Alice Lamping	Otterbein Home Lebanon, Ohio 45036 513/932-2020, Ext. 223	Butler, Clermont, Clinton, Hamilton, Warren
Judy Moffett	Kent State University - Tuscarawas Campus University Drive, N.E. New Philadelphia, Ohio 44663 216/339-3391	Belmont, Carroll, Columbiana, Coshocton (upper N.E. corner), Harrison, Holmes, Jefferson, Monroe, Tuscarawas
Ruth Weaver	Rio Grande College P.O. Box 978 Rio Grande, Ohio 45674 614/245-5306, Ext. 216	Adams, Brown, Gallia, Highland Jackson, Lawrence, Pike, Ross, Scioto, Vinton
Joan Wilson	Heritage House - The Columbus Jewish Home for the Aged 1151 College Avenue Columbus, Ohio 43209 614/237-7417	Delaware, Fayette, Franklin, Logan, Madison, Marion, Morrow, Pickaway, Union

APPENDIX G

OBSOLESCENCE: MANAGERIAL AND TECHNICAL

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APPENDIX H

THE REHABILITATION MODEL

Historical Factors Which Led to the Establishment of Project Care

The closing down of the Mansfield Tire and Rubber Co., Mansfield, Ohio, added between 450 and 500 tire builders to the unemployment list beginning August 28, 1978, bringing the total to nearly 1,000 Mansfield Tire unemployed after a series of lay offs. The close down was not unexpected. The "Tire" had been in serious financial difficulty for several years. What was a municipality in a county with one of the highest unemployment rates in the state going to do for an additional 500 tire builders who were middle aged with unwanted skills? "Tire" employees could not look for work in Akron about sixty miles away for the "rubber capital of the world" was having problems of its own. Since 1950, 24,000 jobs in the city's rubber industry had been lost. Recently Firestone and Goodyear eliminated another 2,400 jobs and Mohawk Rubber closed down for good in November, 1978.

This was not the first crisis Mansfield had faced. When the energy crisis of the winter of 1977-78 hit Mansfield, a number of the area's leading citizens revitalized a crisis response mechanism known as "Project Care". Now another crisis had struck Mansfield. On August 18, 1978, United Community Service (UCS), under the direction of Executive Director John Rhind, conducted the initial meeting of Project Care II (1) to define more clearly the situation in terms of personal and family well-being and points of impact on community resources and (2) to determine what the human resource organizations could do in the short term and the long run. It was agreed that a Project Care III organization should be formed and Glenn Tschantz, Richland County AFL-CIO Community Services representative, served as interim Project Director. It was agreed that USC would produce and distribute a pamphlet to assist the unemployed locate community agencies and assistance.

Development of the Organization/Program/Financing Structure

On Monday, August 29, 1978, a meeting of selected community representatives at the Greater Mansfield Area Growth Corporation (GMAG) concluded that (1) there was need for some group, possibly GMAG, to coordinate the community effort; (2) a meeting would be held the next day to determine what help could be expected from the Department of Economic and Community Development (DECD); (3) other tire manufacturers such as Michelin and Pirelli should be contacted to seek assistance; (4) available employees and their characteristics should be catalogued; (5) training requirements of local business and industry in the coming years should be identified; (6) information concerning available employers should be promoted; (7) cooperation from the Ohio Bureau of Employment Services should be sought; and (8) available training opportunities should be identified at North Central Technical College, Mansfield - Ohio State University, Pioneer Joint Vocational School, and Mansfield and Madison schools.

Henry R. Fallerius, President of North Central Technical College, and James B. Heck, Dean/Director of the Mansfield Ohio State University campus, formed an Education Committee, (2) developed a questionnaire to determine what training could be offered the unemployed in local schools and centers, (3) agreed to coordinate a survey of the unemployed to assess their training interests and relevant skills, and (4) hosted a meeting on September 22, 1978, of school superintendents and adult/continuing education directors to enlist their support. The agenda for the meeting consisted of a review of plans recommended by the Education Committee including (1) review of survey instrument, (2) counselor orientation in use of survey instrument, and (3) commitment to registration centers and time frame for surveying the unemployed. The counselor orientation was held on October 10 and registration of the unemployed was held October 16-20. (See Appendix A for all materials including the survey instrument.)

The Education Committee met on October 23 to analyze the survey, specify a plan of action, and develop a budget. Over 400 unemployed workers in Richland County registered at the centers. The local news media advertised the project and the location of the centers. Mr. Robert B. Fox, Vice President for Business and Finance at NCTC was appointed coordinator of a Budget Committee. A meeting on October 26 of the Education Community with United Community Services paved the way for a meeting on October 27 with representatives from the Department of Economic and Community Development (DECD) and the Manpower Office. These discussions led to a proposal requesting $1,375,000.00 and an organizational structure consisting of a Governing Board, Interium Director Committee, and a Budget Committee. Discussions with the Governor's Grant Office yielded $229,180, $150,000 from CETA and $79,180 from DECD. (See Appendix B for an Organizational Chart.)

The Interum Director Committee (IDC) identified programs which could be run immediately based on interest, employer need, and site and trainer availability. (See Appendix C for a Master Class Schedule) The IDC also developed a position description for the Project Director, advertised the position, and screened applicants. Fire Station No. 2 was obtained as an intake screening Registration Center. Intake screening was conducted December 11-15 for retraining programs in (1) business and office work (2) heating and air conditioning, (3) machine trades, and (4) welding. An orientation session for trainees was held on December 20. Programs began as early as January 9, 1979. The January 11, 1979 meeting of the Governing Board dealt with such matters as (1) a report of the Project Director Search Committee, (2) a report that confirmed a release of $50,000 from the Governor's Grant Office, (3) follow-up of 121 persons actually enrolled in programs and those individuals for whom programs must be implemented, (4) initial discussions about job opportunities and (5) client eligibility for unemployment benefits including assistance through the Trade Readjustment Act of 1974.

The project began to attract attention and received national exposure in the Education Section of the January 7, 1979, issue of the New York Times and in an article by William L. Abbott entitled "The Mansfield Formula for Worker Renewal" published by the Service Center for Community College-Labor Union Cooperation, American Association of Community and Junior College, January 1979. Mr. Abbott also wrote an article by the same title which appeared in the May 1979 issue of Voc Ed, the Journal of the American Vocational Association.

Additional Registrants and Programs

During the week of January 15, 1979, a letter was sent to the remaining registrants informing them of the dates and times of the next intake registration scheduled for the week of January 22, 1979. Although only 173 of the remaining 279 registrants responded, an additional 173 persons from the community indicated an interest in training for a total of 346. Under the direction of Mr. Jerry Pearl, Administrator of Progress Industries, an assessment package was administered; this phase consisted of a series of tests designed to determine an individual's aptitude for a chosen course of study. During the month of February, 1979, classes were begun in carpentry, electricity, industrial maintenance, machine trades and welding at Madison Comprehensive High School; machine trades at Mansfield Senior High School; drafting, machine trades, and welding at North Central Technical College; and welding at Pioneer Joint Vocational School.

Mr. James L. Snyder was hired as Project Director starting on February 20, 1979. His offices were located at Local #17 Union Hall, Mansfield.

Registrant files were kept current. One additional class in basic office education/keypunch was started at the Mansfield Opportunity Industrialization Center in March. Two classes, one in carpentry and another in remodeling were started at John Sherman Middle School in April.

In June, classes in carpentry and remodeling were started at John Sherman Middle School; auto mechanics, basic office education, machine trades, sales and marketing, school custodial maintenance, and welding at Madison Comprehensive High School; and computer operations and heating, ventilation, and air conditioning at North Central Technical College.

Training Summary and Transition to the Workplace

Between January 9 and December 1979, Project Care offered 29 classes covering 14 different subjects at 6 different sites to 392 persons, over 40% of the registrants. The most common problems encountered by the enrollees were monetary in nature. As classes drew to a close, orientation sessions were held by the Mansfield Office of the Ohio Job Service. Although no formal structure for job placement was built into the project, ways to find jobs were discussed and efforts were made to place program graduates in positions. Two "Small Business Workshops" were presented by the Mansfield Chamber of Commerce for participants who intended to start their own business. The workshops covered topics such as business insurance, financial planning, taxes, and licences. Placement follow-ups were done on a 30, 60, and 90 day basis. All files and records were turned over to the Richland/Morrow CETA Administration.

PROJECT CARE

EDUCATION COMMITTEE

(GMAG)

* * GREATER MANSFIELD AREA GROWTH * *

HENRY R. FALLERIUS, CHAIRMAN (NCTC)

DONOVAN CLARK, OSU-M

HAROLD DORSEY, MDIC

JAMES HECK, OSU-M

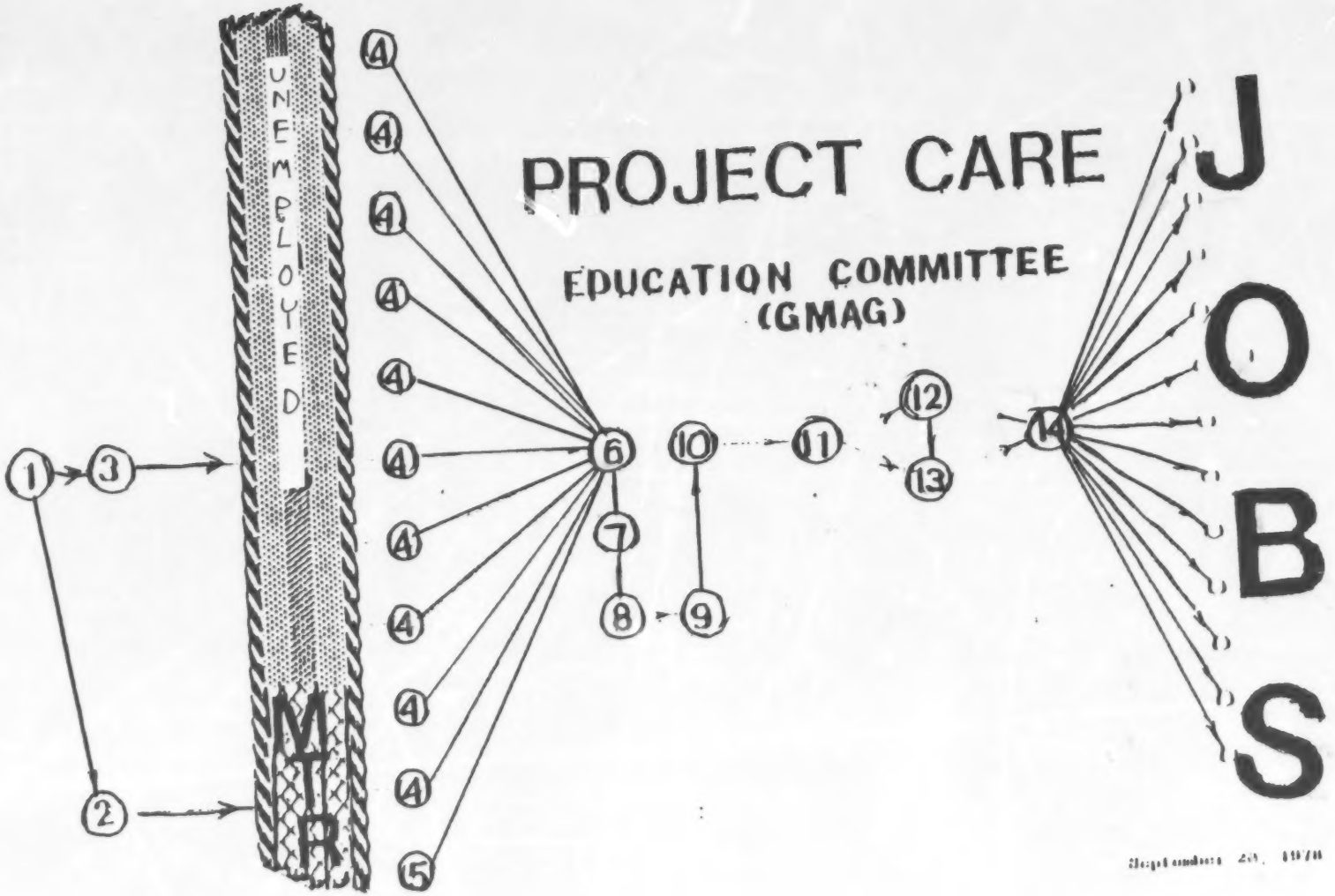
CHIP HIXSON, CETA

ARTHUR LOMAX, NCTC

GLENN TSCHANTZ, RICHLAND COUNTY (OHIO) AFL-CIO

JACK RHIND, UCS (EX-OFFICIO)

SEPTEMBER 20, 1978


PROJECT CARE
EDUCATION COMMITTEE
(GMAG)
UNEMPLOYED
MTR
JOBS
1
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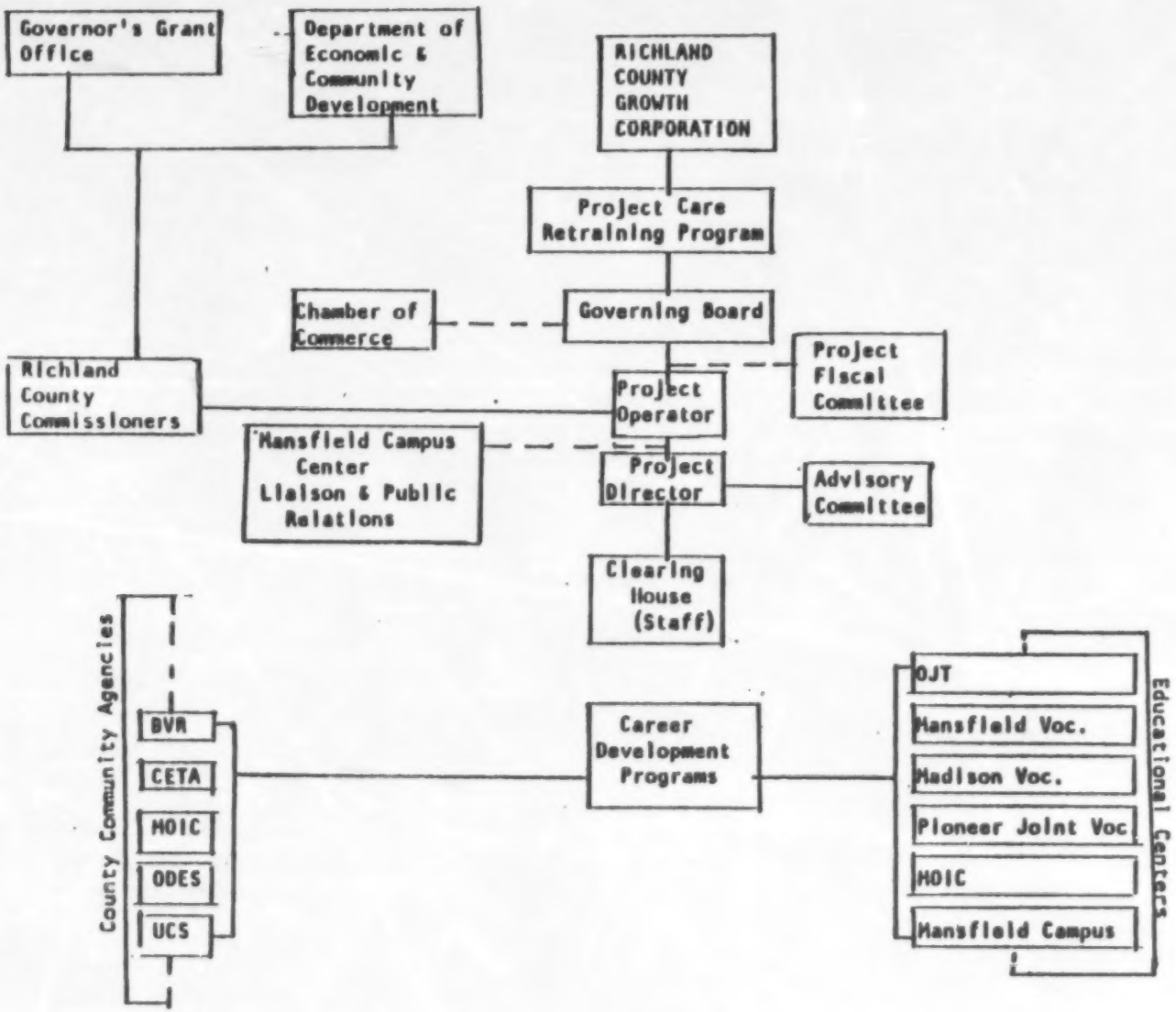
"PROJECT CARE"

ORGANIZATIONAL CHART

November 2, 1978



"PROJECT CARE"
MASTER CLASS SCHEDULE

PROGRAM	LOCATION	STARTING DATE	TIME OF CLASSES	DAYS OF CLASSES	MAXIMUM NUMBER	TOTAL HRS. OF PROGRAM	COMMENTS
Basic Auto Mechanics	Madison	1-9-79	3:30-9:00 pm	M thru F	15-18	540	4-5 hrs. per day
Business & Office	Madison	1-9-79	3:30-9:00 pm	M thru F	15-18	540	4-5 hrs. per day
	P.J.V.S.	In Operation	5:00-10:00 pm	M thru F	20	1200	Buy-In 5
	Mansfield	1-19-79	4pm-9pm	M thru F	12	500	
	NCTC Rm 114	1-2-79	3:00-6:00 pm	M thru F	20	500	
Clerical (Clerk/Typist)	M.O.I.C.	1 wk. from notification	4:00-8:00 pm	M thru F	20	24 wks.	
Drafting	NCTC rm 168	1-2-79	7-10 am 2-5 pm	M thru F	20	500	Additional classes may be scheduled on Saturday 8 am to 5 pm
	NCTC rm 174	1-2-79	10am - 6pm	Friday	20	500	
	*NCTC rm 168	1-2-79	5pm-11pm	MWF	20	500	
	NCTC rm 174	1-2-79	8pm-11pm	T-TH-F	20	500	
Heating & Air Cond.	P.J.V.S.	1-79	6:30-9:30 pm	M-T-W-TH	18	576	Assuming instructor can be found
[illegible]	NCTC rm-085	1-2-79	11am-5pm 12:30pm-5pm 11am-5pm 7am-11am	M T W F	15	800	
Key Punch	MOIC	1 wk. from notification	4:00-9:00pm	M thru F	4	5 weeks	
Machine Trade	P.J.V.S.	1-3-79	6:00-10:00pm	M thru F	18	900	
	Mansfield	1-19-79	4pm-9pm	M thru F	12	1000	

"PROJECT CARE"
MASTER CLASS SCHEDULE (cont.)

PROGRAM	LOCATION	STARTING DATE	TIME OF CLASSES	DAYS OF CLASSES	MAXIMUM NUMBER	TOTAL HRS. OF PROGRAM	COMMENTS
Machine Trades (cont.)	Madison	1-9-79	3:30-9:00pm	M thru F	15-18	540	
	NCTC rm 127	1-2-79	7am-1pm	M thru F	12	600	
	*NCTC rm 127	1-2-79	5pm-11pm	MWF	12	600	
Welding	Madison	1-3-79	3:00-11:00 pm	M thru F	10	640	Buy-in 10
	Mansfield	1-19-79	4pm-9pm	M thru F	12	500	
	NCTC rm 085	1-2-79	11am-5pm 12:30pm-5pm 11am-5pm 7am-11am	M T W F	20	500	

*Evening Classes

ERIC Clearinghouse for Junior Colleges
96 Powell Library Building
University of California
Los Angeles, California 90024
MAY 14 1982